THE

Journal of the American Medical Association.

EDITED UNDER THE DIRECTION OF THE BOARD OF TRUSTEES.

PUBLISHED WEEKLY.

VOL. XIII. CHICAGO, DECEMBER 14, 1889. No. 24.

ORIGINAL ARTICLES.

THE ETIOLOGY OF TYPHOID FEVER.

Read in the Section of the Practice of Medicine, Materia Medica and Physiology, at the Fortieth Annual Meeting of the American Medical Association, June, 1889.

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Mr. Chairman and Gentlemen of the Section:—As my time is limited I shall waste no words in introductory remarks, but shall endeavor to get at the gist of my subject immediately. In 1880 Prof. C. J. Eberth, of Zurich, in eighteen out of forty cases of typhoid fever, found in sections of the spleen and mesenteric glands a bacillus which is distinguished from the ordinary putrefactive bacilli by the difficulty with which it takes up the analine stains. At the same time Eberth reported that in twenty-four similar examinations of those dead from other diseases he was unable to detect this bacillus. From these facts the distinguished Swiss investigator thought himself entitled to claim that he had discovered the true germ of typhoid fever. Even before Eberth's report appeared, Koch had seen and photographed the same bacillus, so that this germ is by some called the Eberth bacillus and by others the Koch-Eberth bacillus. For the sake of brevity, and without expressing any opinion as to the priority of discovery, I shall in the subsequent pages refer to this microörganism as Eberth's germ or Eberth's bacillus.

This organism is now generally regarded as the true cause of typhoid fever, and I shall give my attention first to the grounds upon which this belief is founded. Has it been conclusively demonstrated that the Eberth germ is the sole and sufficient cause of typhoid fever? To what extent have the four rules of Koch been complied with in the study of this germ? Are there any reasons, outside of these rules, for founding a belief either for or against the specific nature of this bacillus?

In the first place, is this organism found invariably in typhoid fever? As has been stated, in his first report Eberth found it in eighteen out of forty cases; but since that time methods have been perfected and many other investigators have studied this point. In the examination of twenty-eight bodies dead from typhoid fever Gaffky found the Eberth germ in twenty-six; Fränkel and Simmonds reported it in twenty-five out of twenty-nine cases; Seitz in twenty-two out of twenty-four; Rietsch in thirty-five out of thirty-six, and Kowalski found it present in each of twenty-nine cases.

Without citing further authorities I may say that the number of cases of genuine typhoid fever in which this germ has not been found, when the examinations have been made by competent men, is so small that we are justified in claiming that the first of Koch's rules has been complied with. Indeed, in reading over the great number of cases referred to in the volumes of Baumgarten's "Jahresbericht," in which the Eberth germ has been reported to be present, one becomes somewhat suspicious of the universality and readiness with which this organism has been detected. Gaffky and others found it always present in the mesenteric glands and spleen, often in the liver, and not so frequently in the kidney. In the intestine it has been found in the early stages in the swollen follicles and plaques and in the deeper layers, before there is any necrosis; but with the advent of ulceration there is found secondary invasion. But in addition to these organs, the Eberth germ has been reported by Chantemesse and Vidal in the lungs of typhoid patients with bronchitis, broncho-pneumonia and pneumonia. The same observers report the germ in the brain, Curschmann in the spinal cord, Zenker and Hoffmann in the voluntary muscles and in the marrow of the bones, and Reher, Neuhauss and Chantemesse and Vidal in the placenta of typhoid patients. In twenty samples of blood taken from the finger, during life, of typhoid patients, Meisels reports the finding of this germ in nineteen. Neuhauss examined the blood taken from the eruptive spots in typhoid fever with success. Maragliano and others examine the blood taken from the spleen during life as a means of diagnosis. The Eberth germ has been found in drinking water by Dreyfuss, Brisac and Vidal, Michael, Noers, Chantemesse, Loir, Thoinot, de Blasi, Galbucci, Beumer, and others. Granting that these observers have not been mistaken in the nature of the germs which they have found,

we must admit that the Eberth germ is widely distributed.

That the second of Koch's rules has been complied with there is no doubt. Pure cultures of this germ are to be found in every bacteriological laboratory. It grows readily in our artificial media, and its characteristics of growth are well known.

The attempts which have been made to induce the disease in the lower animals by inoculation with this germ are numerous and interesting. I shall not attempt to review all of these, but will call your attention to some of the more important ones. The first to experiment with pure cultures was Gaffky. To five Java apes he fed daily cultures without any results. Later these animals died of tuberculosis, and section showed no lesions resembling those of typhoid fever. Equally without result were two other experiments upon apes, in one, the inoculation being made directly into the blood, and in the other, in the tissues over the sternum. Gaffky also inoculated rabbits, Guinea pigs, rats, mice, pigeons, a chicken and a calf—all without result. In these the inoculations were made directly into the blood vessels or into the peritoneal cavity.

The experiments of E. Fränkel and Simmonds seemed at first to prove that the Eberth bacillus is pathogenic to some of the lower animals. These experimenters suspended the germ taken from potato cultures in sterilized water and injected this either directly into the blood or into the peritoneal cavity. Nineteen out of thirty-two rabbits and twenty-seven out of thirty-one mice succumbed to this treatment. These animals survived the injections from a few hours to four days, the majority dying on the first day. The symptoms observed consisted of lessened response to surroundings, lessened inclination to move, loss of appetite and, in many, diarrhœal discharges. Section showed enlargement of the spleen and mesenteric glands, and swelling of the intestinal follicles. In some there were observed enlargement of the axillary and inguinal glands, ecchymoses of serous membranes, inflammatory redness and hæmorrhage in parts of the intestines and parenchymatous swelling of the liver and kidneys. In no case was there suppuration at the point of inoculation. In the spleen, mesenteric glands, liver, kidneys and Peyer's patches the bacillus could be detected. However, the abundance of the bacilli did not correspond with the extent of the macroscopic changes. From these experiments Fränkel and Simmonds concluded that they had successfully transmitted typhoid fever to these animals.

Independently of the above, Di Vesta inoculated with fatal results rabbits and Guinea-pigs. The lesions were not so marked as those found by the Hamburg investigators. Later, A. Fränkel inoculated Guinea-pigs with the Eberth germ after the manner employed by Nicati and Rietsch in their experiments with the cholera bacillus, and which consists in introducing the germ directly into the duodenum, either with or without ligature of the bile duct. Of the fourteen animals thus treated seven died. The anatomical changes observed were similar to those found by E. Fränkel and Simmonds.

Seitz, employing Koch's method for producing cholera in Guinea-pigs, found that seven out of sixteen animals died within forty-eight hours, and one other after four days. The germ could be detected in the intestines, but not in other organs. Intravenous and intraperitoneal injections of the germ produced results similar to those obtained by E. Fränkel and Simmonds.

Beumer and Peiper confirm the observations made by E. Fränkel and Simmonds, and A. Fränkel and Seitz, but interpret their results in a wholly different way and reach a diametrically opposite conclusion. In the first place they find that the effect upon the animal is in direct proportion to the amount of the culture injected; an amount which is small, but which still contains many thousand germs, fails to produce any symptoms. Secondly, they prove that the Eberth germ does not multiply in the body of the animal, but, on the contrary, soon dies. Thirdly, they show that the same symptoms and identical structural changes result from injecting like amounts of certain well-known non-pathogenic bacteria, such as bacillus subtillus, the greenish-yellow liquefying bacillus of water, the white bacillus of water, and others. Thus they show that the death of the animals is due to intoxication, and not to infection; also, that the intoxication is not specific, inasmuch as it is produced with equal facility with other bacteria.

Finally Sirotinin demonstrates that the same symptoms and pathological lesions are produced by sterilized and non-sterilized cultures of the Eberth germ. This completes the proof that the effects observed are not due to the growth of the germ within the body.

To sum up the evidence which we have upon this point, we may say: (1) The Eberth germ is found invariably in the bodies of those dead from typhoid fever. (2) It has been isolated and grown in pure cultures. (3) All attempts to induce typhoid fever in the lower animals by inoculation with this germ have so far been without success. (4) Experiments show not only that the germ fails to multiply in the lower animals, but that, when introduced by inoculation, it soon dies.

I think that every bacteriologist will agree with me in the conclusions which I have just stated; but the bacteriologist stops here and says: "The lower animals do not have typhoid fever, and we must not conclude from the failure to induce this disease in them with Eberth's germ

that this bacillus is not the true cause of typhoid fever." "If we could experiment upon man," says he, "I have no doubt that we would be successful." For these reasons I wish to discuss this germ from the standpoint of the chemist. I think that it is now time for us to supplement the rules of Koch with the following, which should be insisted upon in those cases in which the lower animals are not susceptible to the action of the germ: Before any microörganism can be considered the true and sufficient cause of a given disease, it must be shown that the chemical products of that germ are capable of producing the characteristic symptoms and lesions of that disease in an acute form. Thus, Hoffa has obtained from anthrax cultures chemical substances which cause death, preceded by the symptoms of anthrax. Brieger induces tetanus with the ptomaines produced by the growth of the tetanus bacillus; and, moreover, he has isolated the chemical poison from the tissue of a man with lock-jaw, thus overthrowing the criticism made by Baumgarten that it had not been demonstrated that ptomaines are formed in the living body.

Judged by this chemical test, what can we say about the causal relation of the Eberth bacillus to typhoid fever? Does this germ produce any chemical substance which markedly elevates the temperature, such as mydaleine, or any which induces local inflammatory and necrotic changes in the tissue, such as cadaverine and putrescine? The typhotoxine of Brieger has no such action. It is true that it is poisonous, but it induces neither the symptoms nor the lesions of typhoid fever. Recent extended researches by Brieger on this point failed to discover in cultures of the Eberth germ any real typhoid poison.

With the above facts in view we certainly can not say that the Eberth germ has been demonstrated to be the true and sufficient cause of typhoid fever. The best that we can do is to give the Scotch verdict of "not proven." Brieger is inclined to the opinion that Eberth's germ plays a secondary rôle in the causation of this disease, and in this opinion I am forced, from the evidence at hand at present, to concur.

Flügge says: "Inoculation experiments with both typhoid dejections and pure cultures of the Eberth bacillus have universally been without success. The few experiments in which a typhoid disease has followed inoculation or feeding have been made with impure material containing other active bacteria. It is known that a group of widely distributed organisms, which, however, are wholly different from the typhoid bacillus, have the power, when injected subcutaneously or intravenously, of producing in animals death, with marked swelling and ulceration of Peyer's patches. To these organisms, undoubtedly, are due the apparently positive results which some authors have supposed to be due to inoculation with the typhoid bacillus."

Since there seems to be very good reasons for regarding typhoid fever as due to mixed infection, it may not be without interest to inquire briefly into some of the experiments made with impure cultures or with germs other than that of Eberth.

All the experiments made by Murchison, Klein and Bahrdt, by feeding with typhoid stools, and those made by Motschutkoffski and Walder, by inoculation with the blood of typhoid patients, were without success. However, Birch-Hirschfeld, by feeding rabbits large quantities of the stools, induced a continued fever, loss of flesh, and diarrhœa. Post-mortem examination showed enlargement of the spleen, swelling of the intestinal follicles, and, in two instances, ulceration of Peyer's patches.

In 1881 Brautlecht reported experiments which he made with organisms obtained from drinking water which had been used by many who subsequently suffered from typhoid fever. Rabbits inoculated with cultures of these germs had some elevation of temperature, lost flesh until they became mere skeletons, and died after from two to eight weeks. Very young animals died within two or three days, after having profuse diarrhœal discharges. Post-mortem examination showed in the adult animals invariably a severe catarrh of the small intestines and marked enlargement and coloration of the spleen and mesenteric glands. The walls of the intestines were thickened and friable, the mucous membrane swollen, yellowish and reticulated; ulceration was present in some cases, but was generally confined to individual glands. In sixty-nine experiments there was only one in which there was extensive necrosis. Inflammation and abscesses at the point of inoculation were not observed. It should be stated that the inoculations were made subcutaneously. Infection through the stomach was successful in only a few. The first symptoms to appear in these was diarrhœa. Subsequent cultures of these germs lost their virulence.

At the Cincinnati meeting I made a verbal report to this Section upon some work done by Novy and myself, and asked that we be given more time, in order to repeat our experiments. We obtained from drinking water from Iron Mountain, Mich., where there had been a severe epidemic of typhoid fever, a germ which we could not distinguish, by the microscopical appearance, reactions with staining reagents, and growths in gelatine tubes and on potatoes, from the Eberth bacillus.

March 5, 1888, we inoculated three dogs with this germ, taken from a beef-broth culture twenty days old. The germs were washed with sterilized water, then suspended in the same menstruum and injected into the peritoneal cavity, all precautions, such as shaving off the hair, washing first with a solution of bichloride of mercury and

then with alcohol, having been taken; and I may say here that neither at the point of inoculation nor anywhere else in the animals was there at any time any evidence of septicæmia. The dogs were placed in a large cage with a fourth one, which was employed as a control. For some four or five days after the inoculations we took the temperature of the animals daily, but there being no variation beyond the normal limits we supposed the experiment to be negative, and neither of us visited the animal room until the 2d of April, twenty-eight days after the inoculation, when the janitor told us that one of the dogs had died and the two others had grown very thin and seemed to be sick. A post-mortem examination surprised us by revealing very prominently some of the lesions of typhoid fever. The animal was very much emaciated. I asked Drs. Hendricks and Brewer to make the post-mortem, and the following is their report on the same: "The weight of the body was 20 pounds. Upon the abdominal cavity being opened, the mesenteric fat was observed to be pink, with hæmorrhagic spots. The blood vessels of the intestines were found to be highly injected, with numerous points of hæmorrhagic infiltration. On the mesentery near the cæcum were large hæmorrhagic spots. The lower inch and a half of the ileum was distended and covered externally with clotted blood. The mesenteric glands were enlarged to four or five times their normal size, and each contained numerous hæmorrhagic spots. The glands of the vermiform appendix were much enlarged and were pitted in the centre. Under the mesentery of the cæcum was a plastic exudate, almost transparent. The descending portion of the duodenum showed numerous bright hæmorrhagic spots along the line of its junction with the mesentery. Along the upper portion of the ileum the intestine presented a greenish macerated appearance and a soft, pultaceous feel. Air blown into the intestine escaped through the walls at this point. The mucous membrane of the ileum was swollen and Peyer's patches enlarged, but there were no distinct ulcerations. The liver was indurated and of a deep cherry color; weight, 23 ounces. The kidneys were enlarged to twice the normal size and were dark in color. The spleen was enlarged and of a dark purple color. The stomach was contracted and its mucous membrane showed a few hæmorrhagic spots. The lungs were normal and the heart in diastole and free from clots. The thymus and lymphatic glands were enlarged."

I regret exceedingly that we made no attempt to obtain cultures from the mesenteric glands or spleen of this animal.

The next day we began to take the temperature of the other dogs, with the following results:

	No. 2.	No. 3.	Control.
April 3, 2:00 P.M.	105.0	103.8	100.8
April 3, 5:30 P.M.	105.6	104.4	100.4
April 4, 9:00 A.M.	102.8	104.6	100.8
April 4, 3:30 P.M.	103.0	105.0	101.2
April 5, 10:00 A.M.	105.0	103.8	101.4
April 5, 2:30 P.M.	104.0	103.8	101.7
April 6, 9:30 A.M.	105.6	104.8	101.4
April 6, 3:00 P.M.	106.0	106.2	101.6
April 7, 2:30 P.M.	106.8	105.0	101.0
April 7, 7:30 P.M.	106.8	105.2	101.0
April 8, 11:30 A.M.		104.0	101.4
April 8, 6:00 P.M.		104.2	101.0
April 9, 10:00 A.M.		101.0	101.0
April 9, 6:00 P.M.		101.0	101.5

During the night of April 7th No. 2 died. The post-mortem revealed practically the same condition as found in No. 1, save that there was no perforation of the intestines. As is seen from the above figures, No. 3 had no fever on April 9th, and remained in apparent health as long as he was under observation, which was until June 18th.

Twelve other dogs were inoculated April 18th with a subsequent culture of this organism. In four out of the twelve the temperature at the end of the first week registered between 104 and 105 degrees; by the close of the second week it had fallen to 103 degrees, and during the next week became normal and remained so. In each of three others the highest temperature reached was 103.5 degrees. The others were not apparently affected. Not only did the germ thus seem to lose its virulence, but it soon failed to grow in the culture tubes and died out altogether.

Notwithstanding the marked resemblance of our cultures to those of the Eberth germ, I must conclude from the effects obtained that we either had a wholly different organism or an impure culture.

Now, I do not know that these experiments can be considered of any special importance, but, taken together with those of Brautlecht, I think that they give encouragement for further experiments with microörganisms which may be obtained from the drinking water used by those who have typhoid fever.

During the past six months I have spent four or five hours a day upon the study of the etiology of typhoid fever, approaching the work from a wholly different standpoint from that indicated in the preceding pages. I began last December a chemical study of typhoid stools with especial reference to the presence of ptomaines in the same. However, I soon met with great difficulty. In the first place, it was not easy to always have at hand material in sufficient quantity, and although friends practicing where epidemics of the disease existed kindly took the trouble to endeavor to supply me, this difficulty alone was sufficient to cause me to alter my plans. Moreover, the coloring matter present was taken up by my solvents and it proved no light task to exclude them.

I finally adopted the following method: The

stools were received directly from the patient in a sterilized vessel. With a sterilized platinum needle flasks of meat broth previously sterilized were inoculated with these stools. These flasks were then kept at a constant temperature of from 38° to 40° C. for varying periods of time, after which I attempted to isolate any ptomaines that might be present. Thus, it will be seen that I worked with a mixed culture containing all the germs present in the fæces; the object being to ascertain whether or not the basic substance or substances formed in such cultures would differ from the ptomaine of Eberth's bacillus.

The method of isolating the ptomaine was as follows: After the cultures on meat broth had been kept in the incubator at the temperature of from 38° to 40° C. for from ten to twenty days they were filtered and rendered feebly acid with hydrochloric acid. I may say here that the cultures were invariably ammoniacal. The acidified filtrate was then evaporated to dryness, or as nearly to dryness as could be done, on the water bath. The residue was extracted with absolute alcohol, the extract precipitated with an alcoholic solution of mercuric chloride, saturated at the temperature of the water bath, the precipitate was collected, washed with alcohol, suspended in distilled water, and decomposed with hydrogen sulphide. The mercuric sulphide was removed by filtration, the filtrate evaporated to dryness on the water bath and this residue extracted with absolute alcohol, the extract precipitated with a solution of platinum chloride in absolute alcohol, the precipitate collected, washed with absolute alcohol and dissolved in distilled water. The aqueous solution was concentrated on the water bath until the platinum compounds began to crystallize out. This aqueous solution contains two or more platinum compounds, but so far I have given my attention to only one of them. This forms in rhombic prisms, which are purified by repeated resolution and recrystallization. For purposes of physiological experimentation, this platinum salt was decomposed with hydrogen sulphide and the filtrate concentrated nearly to dryness on the water bath, when the crystals which I now show you form. This is the hydrochloride of the ptomaine.

The following experiments show the action of this ptomaine: February 6, 1889. An aqueous solution, neutral in reaction, of this ptomaine was injected under the skin over the abdomen at 2:50 P.M. The temperature of the rectum before the injection was 100.5°. At 3:35 the temperature was 102.6°, at 4:10, 103.2°. About this time severe purging set in and continued with intermissions and prolonged straining for an hour. At 4:35 the temperature was 103.4°; at 5, 103.9°; at 5:30, 104°; at 6, 103.9°. The temperature was not taken again until 9 A.M. February 7, when it was found to be 102°; at 12, 101.9°; at 6 P.M. 100.5°. Between 2:50 P.M. and 5:30 P.M., or within two hours and forty minutes, the temperature of this animal went up 3.5°. The straining and purging were also marked

May 18, 1889, I gave by the mouth an aqueous solution of the crystals to a dog which weighed 15 lbs. The rectal temperature before the administration of the poison was 101°, the time of administration, 3 P.M. At 3:15 retching and vomiting set in and continued at intervals for more than two hours. At 3:30 the temperature was 103°, an elevation of 2° within one half-hour. At 3:55 the animal began to purge. The first discharges contained much fæcal matter, but the subsequent ones were watery and some of them contained mucus plainly stained with blood. At 4, the temperature was 103.5°, and remained the same at 4:30. The animal was not seen again until 10 A.M. the next day, when its temperature was 100.5° and recovery seemed complete.

I have records of other experiments with this ptomaine, but as they are repetitions of the above in general, I will not detail any more at present.

I should not place any great stress upon the elevation of temperature were that the only symptom, but when taken with the gastro-intestinal disturbance I think that I have some reason for hoping that the discovery of this ptomaine may prove of value in elucidating the etiology of typhoid fever. Of course, further experimentation is necessary. It remains to be seen whether or not typhoid stools invariably contain germs capable of producing this chemical product, also whether or not the same germs are contained in normal stools or in those of any other disease than typhoid fever. Moreover, I hope by means of making plate cultures to determine whether this ptomaine is the result of the activity of a single germ or of two or more microörganisms. I may say that the stools used in these experiments were from undoubted cases of typhoid fever and from three widely separated outbreaks of the disease.

Some of the conditions influencing the formation of this poison may be of interest. It was found most abundantly when the cultures were kept at a temperature of 40° C. for a period of ten days. After this time the amount of the yield grows less, though I have found traces after twenty days. I obtained larger quantities from cultures made on pork broth than from those made upon beef broth, though the poison was never absent from the latter. From 6 quarts of pork broth I obtained as the greatest yield nearly 2 grams of the platinum compound. Though I have made several partial ultimate analyses of the platino-chloride I am not yet ready to give a formula for this base, nor do I care to propose a name for it at the present

The platino-chloride crystallizes in fine rhombic prisms and the hydro-chloride in the red needles which I have shown you. The red color seems

to be inherent to the substance and not due to impurities. The hydro-chloride obtained from the decomposition of the mercury compound has the same color as that from the platinum compound.

The mercury and platinum compounds are insoluble in absolute alcohol, soluble in water. The hydro-chloride is soluble in both water and alcohol.

DR. WELCH said that he must protest against accepting one condition which Dr. Vaughan formulated, viz.: that before we admit that a given microörganism is the cause of a disease we must isolate from cultures of this organism chemical products which are capable, by inoculation or feeding, of producing the symptoms of this disease. It is certainly an important addition to our knowledge of a disease to become acquainted with such chemical products, but this is not essential to a belief in the causative agency of a specific microörganism. If Dr. Vaughan's condition be accepted as an essential link in the chain in proof, then we have not sufficient evidence that many recognized infectious organisms, such as the spirillum of relapsing fever, the bacillus of leprosy, or even the tubercle bacillus, are the causes of their respective diseases. From our present knowledge we are justified in believing that a microörganism which is invariably associated with a disease, which is found in the lesions of the disease and in situations which explain the symptoms and lesions, and which is never found except in association with the disease, must be regarded as the cause of the disease. When in addition to this we are able, by experiments on animals, to reproduce the disease by inoculation of pure cultures, this additional proof is most welcome, but in many infectious diseases we cannot furnish this last method of proof, either because we have not been able to isolate and cultivate the suspected organism, as is the case with relapsing fever, or because animals available for experiment are not susceptible to the disease, as seems to be true of typhoid fever and cholera. For this reason Koch has stated that it is not absolutely necessary that we reproduce the disease experimentally in animals by inoculation before we admit that a given organism found associated with a disease under the conditions stated is the specific cause of the disease. The evidence Dr. Welch believed to be conclusive that the typhoid bacillus is the specific cause of typhoid fever.

Dr. Vaughan's emphasis of the necessity of demonstrating the chemical products of pathogenic microörganisms before we accept their etiological significance, is based upon the assumption that infectious organisms produce their disastrous effects solely by their chemical products, but this assumption is quite unwarrantable. In fact, there is reason to believe that, while some pathogenic organisms act by chemical products, others do not so act.

As Dr. Vaughan himself is doubtful as to the interpretation of his experiments on dogs, Dr. Welch is not inclined to attribute to them any bearing upon the etiology of typhoid fever, without further information than we now possess.

Dr. Vaughan is to be congratulated upon the isolation from typhoid stools of a definite crystalline substance with such interesting properties; but, as Dr. Vaughan himself has stated, it will be necessary to make control chemical observations with diarrhœal or other stools not derived from typhoid patients, before the relation of this substance to typhoid fever becomes clear.

DR. TYSON believed in the truth of the original idea that to establish the specific nature of an organism it is necessary to find it in the blood, that it shall be capable of producing the disease in another creature, and that it shall be here also found. This would seem at least conclusive proof. It seems much a matter of mental constitution how much of these views we accept.

DR. WILSON said that Dr. Vaughan had not claimed that his discoveries had been definitely established. He should certainly be thanked for the manner in which he is working out the difficult task which he has undertaken. Our knowledge of infectious diseases has been acquired by slow stages. Nothing has been revealed by the clinician; scarcely more by the pathologist. The bacteriologist has brought our knowledge a tremendous stadium forward. But there are wide lacunæ that are still obscure and waste. We should be very grateful to the bacteriological chemist for his efforts to help us. There is uncleaned ground, and every just hypothesis, no matter how repugnant, should be gratefully welcomed.

DR. VAUGHAN, in closing the discussion, said: I will give my attention wholly to the criticism of Prof. Welch. Prof. Welch says that the first of Koch's rules is all that is necessary in order to prove that a given germ is the cause of a disease. In other words, because you find Eberth's germ in every case of typhoid fever, it must be the cause of that disease. He does not think that all the failures to induce the disease by inoculation with this germ are of any significance. When Koch first promulgated his four rules and pronounced that they must be complied with before the causal relation of a germ to a disease should be considered as demonstrated, the scientific accuracy of such a demonstration won the confidence of the medical world. Now, Professor Welch says that three of these four rules are unnecessary. He claims that the presence of the Eberth germ in the altered tissue of typhoid tissue is a proof that these germs cause typhoid fever. How does he know that the presence of the germ is the cause and not the result of the disease? He reaches this conclusion by reasoning from analogy. This kind of reasoning may have its value, but it is not scientific. Sup-

pose that an inhabitant of some far off planet should, by means of optical instruments, be able to discern the inhabitants of a certain portion of this globe. Suppose that the portion of this globe which should fall under his observation to be the frigid zone. Here he would find the inhabitants living in houses built of snow and ice, and reasoning by analogy he might conclude that all the inhabitants of the earth live in houses of this kind. The reasoning of Prof. Welch is just as unscientific as that in the supposed case of our planetary observer. Condensed, his reasoning would be about as follows: 1. The bacillus of consumption is found in every case of consumption and the Eberth germ is found in every case of typhoid fever. 2. The bacillus of tuberculosis has been demonstrated to be the cause of consumption. 3. Therefore, the Eberth germ is the cause of typhoid fever.

RAYNAUD'S DISEASE.

Read in the Section of Practice of Medicine, Materia Medica and Physiology, at the Fortieth Annual Meeting of the American Medical Association, June, 1889.

BY G. M. GARLAND, M.D.,
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Death and mortification of a member of the living body, without external injury, were formerly classified under the one head of spontaneous gangrene and considered mysterious visitations. It was thought obstructions to the circulation might be the cause of these strange conditions, and on the other hand, Quesnay (1749) was the first to suggest that gangrene might result from disturbances of nerve function, and he endeavored to establish this theory by nerve sections upon animals.

The matter rested here for many years, until, in 1832, V. François revived interest by an attempt to prove that gangrene may be produced by the influence of the nerves upon the blood-vessels. Then came Virchow's celebrated elucidation of the difficult problems of thrombosis and embolism and his declaration that the term *spontaneous gangrene* was rapidly falling into disuse with the clearer understanding of the arterial and venous service. Virchow found cases, however, which did not fall into the category of "arterial obstruction," and notable among such, the gangrene of ergotism. Moreover, there appeared now and then rare forms of gangrene wherein symmetrical parts of the body were affected. This eccentric group of cases received special attention from Zambecco (1857), Racle (1859), Samuel (1860) and Raynaud (1862).

In recognition of the valuable work of Raynaud in collecting together and critically analyzing all the reported cases of *symmetrical gangrene*, and thereby differentiating a distinct type, this affection has been termed "Raynaud's Disease." In his famous thesis (1862) Raynaud says: "I propose to demonstrate that there exists a variety of dry gangrene affecting the extremities which it is impossible to explain by a vascular obliteration—a variety characterized especially by a remarkable tendency to symmetry, so that it always affects similar parts, the two upper or lower limbs, or the four at the same time. Further, in certain cases, the nose and the ears; and I hope to prove that this kind of gangrene has its cause in a vice of innervation of the capillary vessels." Weiss defines the disease as a neurosis which "manifests itself through various vasomotor, trophic and sensory disturbances, and acquires a peculiar type through a gangrene which appears very often on symmetrical parts of the hands and feet, and more rarely upon other parts of the body."

All cases of this disease do not advance to gangrene, and therefore Raynaud has divided the trouble into three stages as follows:

The first stage is termed *local syncope*. Certain parts of the body, more often the toes and fingers, turn to a waxy, cadaverous color, and the latter are familiarly called "dead fingers—*digiti mortui*." The sensibility is notably diminished and movement is hindered. The skin becomes wrinkled. Subjectively the patient may have simply an indescribable feeling that something is going wrong in the part, or there may be a sensation as if the parts were going to sleep, or light shooting pains may occur. The temperature of the parts affected is notably lowered, as shown by the following tables by Mills:

MILLS' OWN FINGERS.

Right thumb, 93.8° F.; left thumb, 93.2° F.
Right index finger, 92° F.; left index finger, 92.3° F.
Right middle finger, 92.8° F.; left middle finger, 92.7° F.

THE PATIENT'S FINGERS.

Right thumb, 85.1° F.; left thumb, 86° F.
Right index finger, 86.9° F.; left index finger, 84.2° F.
Right middle finger, 85.1° F.; left middle finger, 87.8° F.

The return to the normal state is accompanied by light prickling sensations. The only illustration of this stage which I have seen is in the person of my own uncle, an old gentleman of 78 years. During cool weather for the last few years, he has had great difficulty in preventing several of his fingers from freezing. Whenever he goes out of doors, these fingers become like dead members and he must resort to vigorous rubbing to restore them to the normal.

The second stage is termed *local asphyxia*, and consists of "recurrent paroxysmal attacks of blueness of symmetrical extremities of the body, with return, during the intervals, to a perfectly normal condition" (Barlow). This stage may be sequent to the first or it may develop directly from the normal condition. The part turns dark red, and then gradually blue and black. Sometimes the color is a lead gray or slate. The pain is moderate and may require opiates, but it is not equal to

the pain of gangrene. The return of the color and local temperature to normal may be very rapid, as seen in the following table of Hoesslin:

RIGHT HAND.

6:55	o'clock,	temp.	24.5° C.	Cyanosis still marked.
7:10	"	"	29° "	Cyanosis disappeared.
7:15	"	"	33.8° "	Hand scarlet red.
7:18	"	"	35° "	
7:21	"	"	35.5° "	

The following case by Dr. Barlow will serve to illustrate this phase of the disease:

Girl 5 years old. The whole of the right foot and ankle and the leg for a distance of 3 or 4 inches up had become within a short time cold and of a nearly uniform grayish color. The child whimpered a little with pain in the foot and did not like to have it handled much. On the dorsal surface of each forearm there was an area of perhaps 3 inches in length, of ill-defined blueness and coldness. This slight blue area was more marked on the right than on the left side. The blueness passed away within an hour or two. Two days after, the child had another attack in the presence of Dr. Barlow. There was slight blueness and coldness of the left foot, and the child whimpered a little but was able to walk across the ward with a slight limp, and the foot became natural again in less than half an hour and she had no further trouble. She was out the next day. The attacks were confined to cold weather but came on indoors occasionally, and sometimes commenced with gaping and complaint of sickness.

The third stage is the *symmetrical gangrene*, so called, which usually develops out of the asphyxiated condition. A person may have numerous attacks of local asphyxia and recoveries before gangrene occurs, or the third stage may follow the first attack. The gangrene is usually of the dry, mummified type, and may go on to spontaneous amputation in ten days. Raynaud says he has a choice collection of gangrenous corporate members in his office. Oftentimes, however, the gangrene is of the moist, sloughing character, as will be seen in the cases cited. The pain is sometimes very severe and lasts for several days, and the process of healing is very slow. Three or four months may be consumed in restoring the skin, and then crusts of epidermis may continue to form and detach for more than a year.

The following case was seen by me in February last:

Peter L., a lawyer, 32 years of age. Had always considered himself well, except for the trouble in his feet. He came of rugged English stock, and he said that his grandfather fought on the English side at the battle of Bunker Hill. In 1886 he was called up one cold winter night, and was driven several miles in an open sleigh to draw up a man's will. On returning, he found his right foot slightly frost bitten. A vigorous rubbing restored the circulation, however, and he thought no more of it.

A few days after, he noticed a change in color of one of the toes, and then a superficial sore formed. This gradually healed and then a sore came upon another toe; this sort of thing continued for a year, when he noticed similar appearances upon the toes of his left foot. During the three years that had elapsed at the time I saw him, the individual attacks had so overlapped each other that he had never known a time when his toes were entirely free from these sores. Each new attack was ushered in by a severe pain which lasted for a few days. By wearing old shoes with the toes cut away, he was able to attend to his business. The gangrenous ulcers had usually been so superficial that they left no scar on healing, but there was one large, conspicuous cicatrix, upon the under surface of the right big toe, where the recent loss of tissue had been considerable. At the time of my visit the man appeared as follows: He looked very anæmic and feeble. He had been suffering from a severe cold and a slight pleurisy, of which there remained only a few friction rubs. He was sitting in an easy-chair with his feet supported in front of him. There was one toe on each foot with its tip gangrenous. One or two other toes were deeply asphyxiated. The right foot and leg were swollen, and at times turned blue. There was no apparent diminution of sensation anywhere. He could feel the lightest touch on all the toes. The urine contained no sugar, but revealed evidence of Bright's disease, from which trouble the patient died in May.

Some writers have said that Raynaud's disease is not in itself fatal, but the following case by Dr. T. B. Adams shows that it may cause death:

The patient was a poor, feeble-looking child, with sallow complexion. Her breath had a distinctly gangrenous odor on entering the hospital. The feet and lower third of both legs were perfectly black and gangrenous. The toes were shrivelled up and dry. An irregular line of demarcation existed about the junction of the middle and lower third of both legs, and the suppuration was already considerably advanced. The left leg was more extensively affected than the right. For three months previous the child had been subject, in the forenoon of every day, to attacks of arrested circulation, with imminent gangrene, upon the ears and cheeks and on one or both hands. Ears or cheeks were never observed to be affected on the same side as the hands, but alternately. The child entered the hospital March 11, and died from exhaustion April 7.

THEORIES.

As to the nature of the disease, I find that opinions are widely variant and the evidence incomplete. Raynaud believed that all three stages were due to perverted innervation of the arterioles, and he has written a number of articles to defend this theory. Among other facts, he has noticed

that some patients are affected by an obscurity of vision during the local peripheral discoloration, and in such cases he thinks he has detected a contraction of the retinal vessels, which would harmonize with his theory of arterial spasm. Other writers, while they allow that arterial spasm might account for the white fingers, do not believe that such spasm could be sufficient to produce gangrene, and therefore they think that the trouble is a tropho-neurosis or an impairment of the nutritive functions of the cells themselves, irrespective of the arterial supply.

O. Weber advanced the theory that the color changes in local syncope were due to a spasm of the muscular fibres in the skin itself, while Weiss thinks that the local asphyxia is due to a spasm of the veins of the part. These theories, however, have received no credence beyond their own authors.

Pitres and Vaillard report a case in which at the post-mortem they found parenchymatous degeneration in the nerves of the part, *i. e.*, a local neuritis which extended for some distance outside of the dead tissue. They said the changes observed were not such as ordinarily occur in thrombotic gangrene, and which are due to an extension of inflammation from neighboring tissues, and they think that their case was a neuritis. On the other hand, Recklinghausen reports a case, wherein he found an endoarteritis obliterans in the arterioles of the gangrenous member. It is evident, therefore, that similar conditions may be induced by dissimilar processes, and that many cases which are to-day grouped under one heading must be further differentiated before we can reach a satisfactory solution of the essence of Raynaud's disease.

ETIOLOGY.

Numerous accidents and insults have been quoted as productive of symmetrical gangrene. In the case reported by the reader, frost bite seemed to be the provoking cause in the right foot. Syphilis, malaria, abuse of morphine, heredity, have all been advanced as causes of this disease. Hochenegg says that various disturbances of nutrition may provoke symmetrical gangrene, as

a. Excessive physical exertion.

b. Chlorosis and chronic anæmia.

c. Chronic inflammatory and acute infectious diseases.

Symmetrical gangrene is also often observed with Bright's disease and diabetes. Goldschmidt describes a case in which gangrene was associated with scleroderma, and he believes, with a number of others, that Raynaud's disease is only one phase of scleroderma. On the other hand, local syncope not infrequently accompanies attacks of paroxysmal hæmoglobinuria, and Dr. Druitt describes such an association in his own person. During an attack, he would fall into a condition resembling the algid stage of cholera. Then a patch on his cheek or his nose or his fingers would grow cold and white. He also had such localized syncopal spots with attacks of jaundice, supposed to be due to spasm of the hepatic arteries. He believed in the angio-neurosis theory.

TREATMENT.

The treatment of any stage of Raynaud's disease is extremely unsatisfactory. The *digiti mortui* recur again and again during the cold months, and nothing can prevent it. The most one can do is to keep the parts from actually freezing during their bloodless condition. The local asphyxia is equally obstinate. Some persons never have but one attack, while in others it recurs at irregular intervals. Raynaud and Barlow think that they have mitigated and shortened individual attacks by the use of galvanism, but they both agree that this does not prevent recurrence. At first, Raynaud applied the galvanism along the spine, on the supposition that the seat of the disease was central, but he soon found that peripheral applications worked equally well. Internally, various remedies have been employed with invariably negative results. Nitrite of amyl has no power to abort an attack of local syncope. Iodide of potash and nitro-glycerine are equally impotent.

In closing this paper, it will be of interest to note a peculiar affection described by S. Weir Mitchell, and termed erythromelalgia or red neuralgia. This is a painful affection of the extremities, generally of the feet, and is accompanied by a flushing and mottling of the parts upon slight exertion. It may attack the toes symmetrically and progressively. There is intense pain in the toes and bottoms of the feet, which is relieved by rest and the horizontal position. The trouble occurs oftenest in males, between the ages of 20 and 40 years. It is not amenable to treatment.

ON THE VALUE OF ANTISEPTIC TREATMENT, AND PROTECTION FOR THE MEMBRANA-TYMPANI, IN PERFORATIONS THE RESULT OF OTORRHŒA.

Read in the Section of Laryngology and Otology, at the Fortieth Annual Meeting of the American Medical Association, Newport, R. I., June 25, 1889.

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It will not be necessary at this late date, to advocate or dwell at length upon the great value, nay, absolute importance, of antiseptic surgery. Its latest triumphs and most brilliant results, have been shown in brain surgery. It is not only possible to reach and drain abscesses in the temporo-sphenoidal lobe of the cerebrum, but it

is considered possible to save life by opening into the cerebellar fossæ and removing pus from the neighborhood of the lateral sinus. The antiseptic treatment of chronic purulent disease of the middle ear was a natural sequence, and was soon followed by the use of boracic acid in powder and solution, and still later by the superior antiseptic agent, bi-chloride of mercury in solution; then the use of antiseptic wool and gauze, with the protecting agency of oiled silk as "protectors" and artificial membranes which act so as to prevent the entrance of diseased germs from the air. As long as there is a discharge, open Eustachian tube, wash with the solution, then apply the gauze, and when the suppuration has ceased employ the oil silk, or rubber, cut about the size of the membrane applied to the perforation, and when the parts are very dry, use the antiseptic solution or equal parts of ether and glycerine.

Some of the causes preventing the cure of a discharge from the ear, are:

1. The perforation may be so small that injections cannot be made to enter or penetrate the tympanic cavity. These openings must be enlarged.

2. Concealed polypoid growths. These must be snared or touched with chromic acid.

3. A circumscribed area of carious bone involving the ossicles, or attic or mastoid antrum. They are to be removed through the mastoid.

4. A fistulous canal, caused by necrosis of the bone, which forms the upper and posterior wall of the osseous external auditory canal. This is to be kept clean by the mercurial solution; and carious bones or granulations are to be removed by the sharp spoon.

In Non-Closure of Perforations of the Membrana Tympani.—Various attempts have been made to cover perforations of the membrana tympani. Berthold and others attempted to close these perforations by grafts of skin from the arm. These proved too thick and difficult to adapt to the edges of the perforation. He then abandoned this for the lining membrane of the chicken's egg, which is known to be vascular and capable of resisting putrefaction for some time. A fresh egg only must be used, and a suitably sized piece applied to the perforation by means of an especial canula.

Dubousquet substituted for the last-named membrane bits of interdigital skin from the frog's foot. Baratoux has used the *nictitating* membrane of the frog's eye for the same purpose with good results. He also has used it to resolve mucous membrane in certain forms of rhinitis.

Perforations in Young Children are more difficult to treat. Inspection often fails to reveal a preforation, on account of the difficulty of getting a full view of the membrana tympani. This is due to the position of the drum-membrane relatively to the meatus. In the infant, at birth, the membrana tympani lies almost horizontally, and as a consequence, the walls of the meatus lie in contact. At this age the osseous meatus is almost entirely wanting.

In order to gain a view of the membrane in infants, it is necessary, instead of straightening the meatus by drawing the auricle upwards and backwards, as is done in the adult, to draw the auricle downward and outward, and in using the speculum to look upward.

By way of illustration I quote two cases of antiseptic treatment in *otitis media chronica*, with perforation, long continued discharge and noises, entirely relieved by the use of antiseptic covering, as a means of protection from the air.

Nov. 3, 1888. Mrs. A. C., æt. 55, from the interior of Pennsylvania, has been under treatment for perforation in both ears, has a tendency to rheumatic gout, great depression, and heart enlargement from long continued nursing, heavy lifting, etc.

To relieve noises, a 1 per cent. solution of nitro-glycerine was directed, also lithiated potash for rheumatic pain. The ear was cleansed, and then treated with ointment of the yellow oxide of mercury and morphia.

For the slight discharge: Applied antiseptic protectors (gauze sterilized by a solution of mercuric bi-chloride, 1-4000) in both ears. No pain was experienced except in the nape of the neck, for which bromide of sodium 30 grains at bedtime, was prescribed, and over the mastoid painted with tincture of iodine.

It is not necessary to enter into detail, save to say, that one "protector" remained intact for months. No inconvenience resulted, and no noises were heard in left ear, and but slight fulness remained in right. The use of the bromide was continued; so, also, the local application of tincture of iodine.

In the case of Mrs. Robert M. I., æt. 30 years, an otorrhœa (*otitis media chronica*) with three perforations in right ear and two in the left; has had more or less discharge for thirty years, and has been under the best of care in New York and Philadelphia; but only received temporary benefit. By the use of equal parts of glycerine and tinctura ferri seq. chl. to the throat and antiseptic solution to the ear, the perforations in the right ear closed. There still remain two perforations in the left ear, which have become free from discharge; these were covered with antiseptic protectors, and now the patient is much improved in her hearing, no pain and no discharge. I might occupy your time in details of at least fifty similar cases, of all ages, occurring within the last two years, some of them of the most severe and protracted character, which have eventually been either cured, or else so protected that they were no longer distressing to the patient. The great

secret is the use of the antiseptic, and excluding of foul and contaminated air, which is all the while charged with injurious material, which irritates the delicate mucous membrane, by simple contact, or generating bacteria, and micrococci of various forms. This poison causes not only grave disease of the middle ear, but also of the brain, entering the blood, and being carried from thence to the lungs ultimately, developing phthisis and other constitutional diseases, more especially in the young and delicate. To prevent such results, I always resort to constitutional treatment, the syrup of the iodide of iron for children, and for adults, to "Chapoteaut's morrhuol," or active principle of cod-liver oil, and the elixir of the valerianate of strychnine.

The "protectors" or artificial membranes have another advantage in that they in the majority of cases, while assisting the healing of the perforation, improve the patient's hearing by support and pressure on the ossicles.

I would recommend thorough and complete antisepsis in all cases of otorrhœa. The cleansing must be done by skilled hands, and just so soon as all products of fermentation or decomposition are removed, then the healing process will commence, and "Dame Nature" will complete the cure.

I use the term "protectors," because, be the substances used to exclude noxious air or vegetable or animal life, what they may, they do not always act as artificial membranes (membrana tympani), and if in using such a protector of inert material or of animal tissue, we can secure the double purpose of antiseptic protection and augmentation of hearing power, we have every reason to be satisfied.

In conclusion, I should urge treatment in every case of otorrhœa with the idea of not only preventing all discharge, but of furnishing protection, at all times, to the mucous membrane of the tympanum; which protection, in the form of a mechanical protector, in nine cases out of ten, practically acts as an artificial membrana tympani.

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RELAXATION AND MANAGEMENT OF THE PERINEUM DURING PARTURITION.

Read before the Golden Belt District Medical Society of Kansas, July 4, 1889.

BY WILLIAM B. DEWEES, A.M., M.D.,
OF SALINA, KAN.

(*Concluded from page 355.*)

This brings us to the second grand division of the subject. Recognizing the natural law, that:

1. Normally, every perineum will properly distend to allow the exit of the child, leaving all the tissues intact,

2. To obtain a normal dilatation of the perineum, sufficient to allow the exit of the child, preserving the integrity of the tissues, is the highest object attainable.

It becomes the most solemn duty of the obstetrician to conscientiously endeavor, by a studious scientific inquiry, to seek and remove—as far as lies within his knowledge and skill—the *real cause* of the defective distensibility of the soft parts; to which factor, science and experience alike teach us, parturient lacerations of the perineum must be so largely ascribed; if he would do the best thing, in the best way, to prevent rupture when the head is down on the perineum.

Contemplating this subject, I have endeavored to seek in nature the phenomena of the *true doctrine*. Lest I fail to acquit myself of a just consideration, let me assure you of my entertaining no particular attachment, nor prejudice, to any opinion of the authorities respecting it. This circumstance gained me the advantage of an unbiased and impartial examination of facts, from which I drew my conclusions with a deference to reason. Thus, for more than fourteen years, my earnest practical attention has been devoted to this subject, at every opportunity presenting. Being called to a woman in labor, and finding her in the first stage, I invariably endeavor to ascertain, as early as possible, whether there is any disposition in the soft parts to yield, as labor advances, and whether it be complicated with any mechanical obstruction, such as indurations, scirrhus, contractions, adhesions, tumors, malformations, etc. The case proving to be one within the scope of this paper, and bearing in mind the two general causes of laceration, to wit:

First.—The undilatable character of the perineum and adjacent soft parts, chiefly the vulva and anterior perineum; and

Second.—The wrong direction in which the uterine forces operate.

The indications for relaxation and management are very clear, viz.:

First.—To remove all exciting and aggravating causes, and to diminish, by direct or indirect measures, the vascular and nervous excitement, both general and local.

Second.—To guard the perineum, by guiding, controlling or aiding, with artificial means (chiefly the hands and forceps) the uterine forces so as to operate properly.

With my mind thus refreshed, I keep the lying-in chamber quiet, cool and well ventilated; allow the patient none but semi-solid and liquid, easily digestible food; limit the company to the fewest number consistent with the requirements; confine conversation to suitable and agreeable topics; quiet the patient's anxieties with presenting the most favorable prospect in accordance with the

truth and duty; and constantly direct every detail tending to better her physical comfort. Thus removing all exciting and aggravating causes, I proceed to the consideration of the means which proved most efficient, to diminish vascular and nervous excitement, thereby obtaining normal distensibility of the tissues.

Ordinarily my first step is a rectal enema of *hot water*, 120° F., ranging in quantity from 1 to 3 pints, administered during the interval of pains, with the patient lying in the left lateral semi-prone position; the water allowed to be evacuated only when it can no longer be retained. This may be repeated several times, *pro re nata*. The first injection will usually be voided in a few minutes, doing scarce more good than bringing away the accumulated fæces. However, a second one, administered immediately after, will be easily retained from fifteen to thirty minutes and even longer. During the pains *hot water*, from 120° to 130° F. (as hot as the patient can bear comfortably) wrung out in clean cloths, applied to the distended perineum and vulva. Water used *hot* as here indicated, has proven of great value in my hands. In the majority of cases of "vital rigidity" its therapeutic value was chiefly manifested, in order as follows: By giving great comfort to the patient, in producing a general warmth and quietude; by allaying both vascular and nervous excitement; by promoting labor pains; by inducing rapid relaxation of the os uteri, vagina, perineum and vulva; and in many instances lessen suffering and shorten labor very materially. The minority of cases of this class will, however, not yield to this treatment; hence we have to resort to other means following this step, in our endeavor to successfully aid this physiological process to its safe termination.

This brings us now, to carefully notice the two distinct general classes into which these cases are naturally divided, in order that we may the more intelligently comprehend the indications for treatment in each class respectively, lest we should find ourselves guilty of error, with serious consequences to mother or child, or both, as well as to our own reputation. These two general classes are:

First.—Those who are mainly of a "*sanguine temperament*"—plethoric, of firm fibre or possess much muscular power, and who are generally composed but irritable.

Second.—Those who are mainly of a "*lymphatic temperament*"—anæmic, of lax fibre or possess but little muscular power, and who are generally nervous and irritable.

The two remedies paramount are *blood-letting* and *chloroform*. Venesection is the sheet-anchor in the first, while chloroform is equally so in the second, of the two general classes of these cases.

Were these grand distinctions more generally recognized and these rational means properly employed, we would learn much less frequently of the serious results occurring from rigidity, than the present statistics are forced to show. This is, however, not a new—though it be a much neglected—doctrine, for we learn that as early as 1860 Hodge[76] wrote: "The testimony of practitioners seems to prove very positively, that all the rigidity which depends on *muscular excitement*, often so great as to cause spasms, will be relieved by anæsthesia; the tension disappears, and the tissues become relaxed; but where the rigidity depends more upon *vascular excitement*, or upon any physical condition of the parts, there is comparatively little or no relaxation."

Experience has taught us, however, that the distinction drawn by Hodge, though proper, is too scarce in detail to serve as a reliable safeguard to all, when occasion demands discrimination at the bedside. Therefore I beg leave to submit the following differentiation as to the employment of these means, as well as the similarity in result obtained:

BLOOD-LETTING.	CHLOROFORM.
1. Blood-letting (venesection) is indicated and should be employed only in the first of the two general classes of these cases.	1. Chloroform is indicated and should be employed only in cases of the second class.
2. To be effectual must be copious. We have not observed in any instance, that a less quantity than 20 ozs. has produced any great effect upon the rigid tissues at the pelvic outlet; but in those cases where from 20 to 40 ozs. were taken, it frequently acted like a charm in producing rapid dilatation of the parts. Hence we have often repeated the operation, with the most happy results, when no effect was manifested from the first bleeding. The uterine contractions when weakened from prolonged efforts, in these cases, have invariably been stimulated into healthy activity following this procedure.	2. To be effectual, must be administered moderately and only during the period of uterine contraction; but at no time, to *total* unconsciousness and insensibility,—or to complete anæsthesia. We have not observed in any instance, that any great effect was produced upon the rigid tissues by this agent, unless continued to semi-anæsthesia, when it often acted very effectually in producing dilatation of the parts; as well as stimulate the uterine contractions to healthy activity, whenever previously weakened by prolonged efforts; but that whenever it was pushed to complete anæsthesia the uterine contractions were arrested. It is preferably administered by placing ½ to 1 teaspoonful of chloroform upon a little absorbent cotton at the bottom of a goblet, and requesting the parturient woman to hold the goblet in her own hand, raising it to her nostrils at the "on-coming of each pain," and to freely inhale therefrom. The moment the much desired stage of semi-anæsthesia is reached, the hand with goblet will drop, and thus we have a safety-valve against complete anæsthesia.
3. Thus employed, at the time of parturition, is a safe, easy and effectual means of lessening the suffering; relaxing the rigidity of the perineum and adjacent soft parts; and often shortens labor very materially.	3. Thus employed, at the time of parturition, is a safe, easy and effectual means of lessening the suffering, relaxing the rigidity of the perineum and adjacent soft parts, and less often shorten labor.
4. It may be objected to this practice, that copious blood-letting would occasion syncope, whereby the uterus might lose its power of contraction and consequently there would be an inability to expel the fœtus. Such an accident we believe could not occur unless considerable more blood than necessary was taken, since we have the following two laws, as well established factors in science: *First.*—That a large quantity (20 to 40, and even 60 ozs.) of blood,	4. It may be objected to this practice, that chloroform anæsthesia would occasion cerebral anæmia, whereby the uterus might lose its power of contraction and consequently there would be an inability to expel the fœtus. Such an accident we believe could not occur unless considerably more chloroform than necessary was administered, since we have the following two laws, as well established factors in science: *First.*—That chloroform may be administered periodically in

[76] Hodge's System of Obstetrics, p. 427—remarks on perineum.

may be drawn from the arm of the parturient woman, without injury to the mother or child.	small quantity (from ½ to 1 dr.) to the parturient woman, without injury to the mother or child; but administering it continuously or to complete anæsthesia, is always fraught with great danger.
Second.—That it is not necessary to bleed until fainting is induced, in order to effect a relaxation of the parts or to restore the uterus to its normal action.	*Second.*—That it is not necessary to administer the anæsthetic continuously nor to complete anæsthesia, in order to effect a relaxation of the parts, or to restore the uterus to its normal action.

Speaking of the wrong direction in which the uterine forces operate, as a frequent cause of lacerations, we can do no better than quote Hodge,[77] who teaches that: "Perforations occur frequently, because the whole uterine forces are directed chiefly upon the posterior perineum, as is observed in occipito-posterior positions of the vertex, in some positions, it is said, of the shoulder presentations, but more especially in cases of deformed pelvis, especially where the sacrum is too straight, or too near the pubis, or where the os coccygis is anchylosed or turned too much inward, and also where the rami of the pubis and ischia approximate too closely, making the arch of the pubis too angular. In all such instances, the proper extension of the head cannot occur, and it is determined inordinately against the floor of the pelvis." Here, we repeat, the indications for management are "to guard the perineum by guiding, controlling or aiding, with artificial means, the uterine forces, so as to operate properly."

This is chiefly to be accomplished by the *hands* and *forceps*. But it must be remembered that no one definite procedure can be given by which all the different conditions occurring from this cause can be equally successfully corrected. Therefore it behooves every conscientious physician who undertakes to direct the parturient process, to carefully, thoughtfully and earnestly study the character, condition and, so to speak, the individuality of each case of labor to which he may be called, if he would intelligently "follow his guide and fear no evil," and obtain all possible success in preserving the integrity of the tissues. Nevertheless, how often do we find physicians who are in the habit of making an examination by the vagina in order to ascertain the progress of labor, without paying any attention to the individual state of either the *physical* or *nervous* condition of the patient, and idly sitting by the continued useless sufferings, awaiting the "labor's own time for termination." I have seen—one of my earliest cases, while faithfully carrying out directions "to wait at my post," a consulting physician draw a dead child through a ruptured perineum —a child lost, and the perineum separated. How much better to have applied the forceps in time to save the child perhaps, and with proper precautions the perineum, sparing the mother all that long agony. Case No. 4 of this paper is likewise in point.

[77] Hodge's System of Obstetrics, p. 422.

Forceps delivery not being within the province of this paper, I shall confine myself, in my concluding remarks, to the use of the hands. Of the various foregoing methods as advised by the numerous authorities on this subject, I have myself found the greatest benefit from those as practiced by Goodell, Playfair and Reamy.

However, neither of these methods enabled me to secure all that it seemed possible to obtain in this direction, consequently—"Find thou the method, and the means prepare." I have endeavored to find the means by which the greatest possible good could be obtained, and take great pleasure to submit for your consideration and criticism the following management, which proved more beneficial than any other, tried with my hands:

When I find the head fairly engaged in the pelvis, and advancing with each pain, the tissues rigid and unyielding, I take my seat by the patient's bed and, having lubricated my left thumb, or the two first fingers of my right hand, I introduce either into the vagina, by hooking over the fourchette and posterior commissure, and at the outset of a uterine contraction draw back the perineum firmly but gently toward the coccyx, as far as is possible, relaxing the tension gradually as the contraction lessens; repeating the same procedure at each ensuing contraction, till I can draw back the perineum with slight effort. During the interval of contractions, I foment the parts with hot water (120° to 130° F.) wrung out in clean cloths (towel or napkin), and also freely using inunctions of lard. Thus I *tire out* the contractility of the muscular structures, and produce relaxation, as well as a consequent disposition of the tissues to dilate. In most cases so treated the perineum is in the least possible danger; and in this connection, may I be permitted to ask—Does it not seem anomalous, that the perineum should be expected to dilate on such a short notice, namely: the "*process of extension*," while dilatation of the os and cervix occupy such a considerable time, comparatively speaking, even with the additional help of *Nature's hydrostatic dilator*, viz.: the bag of waters?

The drawing back of the perineum produces no additional suffering, as it is done during a uterine contraction. However, when the head begins to bulge the perineum, and its distension is such as to indicate peril to its attenuated structures, I order the patient placed in the left lateral (English) position obliquely across the bed, with the nates brought to its verge, the thighs and legs semi-flexed, and the right thigh supported during the period of contractions, by the hand of the nurse, is held in a position raised about 18 inches from its fellow.

Placing my hands, with thumbs parallel, upon the perineum, about 1 inch from its median line on each side, the tips forward and on a level with

the posterior commissure, the fingers grasping the tissues around the nates on each side respectively (See Fig. 1), I am able to give the greatest possible aid, by exerting pressure during the efforts at expulsion by the uterine contractions in such amount, in such direction and at such part of my thumbs and palms as the necessities of the case may demand. (See Fig. 2.) This is a combination method—support with a view to relaxation. Pressure can be so exerted at the palms in the direction of the axis of the inferior strait, with a view of extension of the head, and later on in a more forward direction with a view of sustaining flexion of the head; at the tips of the thumbs with a view of retarding the head and preventing its too sudden exit, and also to aid in sustaining flexion of the head during its exit: while pressure at the same time upon the pelvic floor, so exerted as to endeavor to bring the thumbs closer together with a view of pushing the skin from adjacent parts toward the fourchette, thereby securing the greatest possible diameter of the vulvar outlet in that its plane is brought nearest at right angles to the axis of exit of the parturient canal—(as pointed out by Garrigues—See Fig. 3), as well as furnishing the greatest amount of skin for its dilatation, and preventing rupture. It must be remembered that the perineum admits of a division into two parts, viz.: the *vulvar or external*, and the *vaginal or internal;* the former lies external to the muscles and the latter includes all the rest. Indeed, much has been written lately of the structure of the perineum, and it is interesting and profitable to carefully note the discoveries as made by the recent investigations of Ranny,[78] D. Berry Hart,[79] Savage,[80] Thomas,[81] and Garrigues,[82] which not only tend to overthrow the prevailing views concerning the muscles and other structures of the

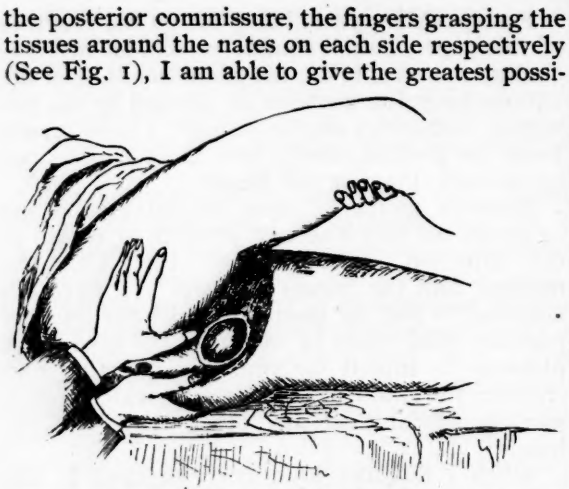

FIGURE 1.—Illustrates the application of the hands, with thumbs parallel upon the perineum, about one inch from its median line on each side, the tips forward and on a level with the posterior commissure, the fingers grasping the tissues around the nates on each side respectively. Thus the greatest possible aid can be given by exerting pressure during the efforts at expulsion by the uterine contractions, in such amount, in such direction, and at such parts of the thumbs and palms, as the necessity of the case may demand.

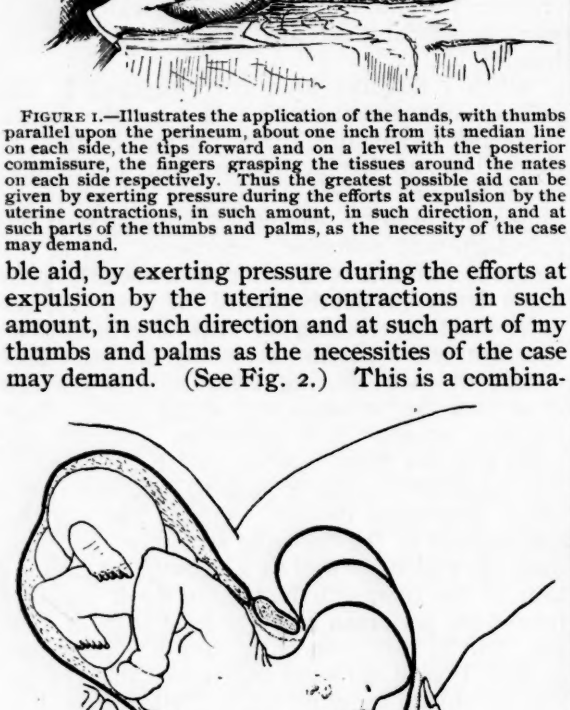

FIGURE 2.—Illustrates the natural bulging of the perineum, by the child's head, in the various stages of extension and flexion, in its advance during exit from the parturient canal. This also shows the convexity of the perineum, and the even application of the hands (compare Fig. 1), whereby the pressure is so evenly distributed as to avoid that perilous excitation of expulsive efforts, through reflex stimulation, that is caused by the localized, partial and unequal pressure (a fact elicited by W. Tyler Smith*), when but one hand or the fingers are employed. Here can also be seen how pressure exerted at different parts of the palm, or thumb, or both combined, in different directions, will aid in sustaining extension or flexion of the head, and in bringing to aid the tissues from the adjacent parts, and by pushing forward and upward, secure the natural advance of the fourchette, as well as the right angle of the plane of the vulvar outlet to the axis of exit of the parturient canal.

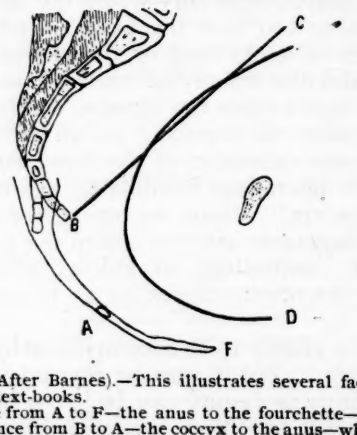

FIGURE 3—(After Barnes).—This illustrates several facts rarely referred to in text-books.

The distance from A to F—the anus to the fourchette—is greater than the distance from B to A—the coccyx to the anus—while in the non-parturient state the latter is only about one-half that of the former; thus showing the elongation of the perineum during the exit of the child's head. This elongation of the perineum, and the bending backward of the coccyx, contribute to the hemispherical contour of the perineum noticed in parturition. (Compare Figs. 1 and 2.)

Here we have illustrated also the fact as pointed out by Garrigues,† "in order to get the greatest diameter of the vulvar outlet, it should be as nearly as possible at right angles to the axis of exit to the parturient canal." And again, the natural fact of this downward and forward movement of the posterior perineum, as elicited by Goodell,‡ "the fourchette approximating the level of the symphysis," which must be aimed at in endeavoring to render aid successfully.

* Lectures on Midwifery, page 367.

† American Journal of Obstetrics, 1880, p. 241.

‡ Clinical Lectures at University of Pennsylvania Hospital, Philadelphia, 1877.

78 N. Y. Med. Journal, 1882.

79 Atlas of Female Pelvic Anatomy, plate xix.

80 Papers on the Female Perineum.

81 Thomas' Diseases of Women, fifth edition, chap. ix.

82 "Obst. Treat. of Perineum,"—in Am. Journal of Obstetrics.

perineum, but more especially to the latter two are due the facts of pointing out the imperfections of the descriptions of this part of the body in the various works on anatomy. The latter in particular seeks to correct many current false impressions. He says: "The fourchette, so generally torn in first labors, is not a fold of mucous membrane, as usually supposed, but is formed of skin. It is, indeed, nothing else than the posterior junction of the labia majora; just within is the *fossa navicularis*." The elaborate description of the floor of the pelvis is well worthy of study, but is too lengthy to be reproduced in this paper. Emmet[83] more aptly than any other, illustrated the muscular lesion in laceration, when he compared it to the drawing aside of curtains, as evidenced by the anatomical relations of the muscles, from the above named investigations. My object in calling the attention of the Association to these facts, is to secure cognizance of all the essentials necessary to obtain the best results.

Finally, my personal experience of no less than from twelve to fourteen years with the "manner of management" proposed and advocated in this paper, warrants me in confidently commending it. But, to succeed with it, requires a most thorough comprehension of the principles upon which it acts, and most faithful painstaking in every detail of its execution.

As the country general practitioner and the eminent city accoucheur likewise, may unexpectedly meet with parturient wounds of the perineum, even when the utmost caution and care have been exercised by following the plans and advice of well known and leading authorities, we deem it not out of place to have a free interchange of experience and opinion respecting the best means to preserve the perineum intact.

I feel warranted in saying, that any physician who does not earnestly labor to acquaint himself with the farthest advancements, and zealously endeavor to observe well established laws which are life-saving and health-giving, in the discharge of the duties of his calling, perpetrates the greatest wrong on his patient. It will not avail to abuse or ridicule the specialist. Those unsealed lips will speak out in future against the man who does not heed the warning. How much better, then, to prove ourselves like the clerk of Oxenford in Chaucer:

"Gladly wolde he lerne, and gladly teche."

REPORT OF CASES.

I beg leave to narrate several cases in practice, demonstrating the principles advocated in this paper. But, let me not neglect the all-important fact, viz.: Should rupture occur, the IMMEDIATE operation for repair must be resorted to. The fallacy and danger of delay in the work of repair cannot be too clearly pointed out, nor too positively condemned. Of the different steps of the operation I shall not speak, but earnestly advocate that the clear and rational teachings of Emmet, Goodell, and others, be definitely and absolutely observed in detail, and success, in all reasonable measure, must result.

HOT WATER.

Case 1.—At 7 o'clock A.M. on July 28, 1878, I was called in consultation with Dr. Bechtle, to a case of placenta prævia. Hastening to the place, I found the patient had been in labor and flowing all night, and had lost a considerable quantity of blood; the labor pains from the outset were strong and frequent; that she was of lymphatic temperament, anæmic, nervous, and very irritable, of a tuberculous family and 26 years of age, and in labor with her first child. An examination revealed a very rigid state of the perineum and soft parts, the touch of the finger to the vaginal walls producing a spasm of the tissues almost similar to vaginismus, thus it was with difficulty that I inserted my finger sufficiently high up to reach the os uteri, which was dilated to about the size of a silver quarter-dollar, its edges thin, wiry and unyielding, while the diagnosis was confirmed.

Blood-letting being here contraindicated, chloroform inhalations were considered and advised as the best means to overcome the difficulty, but the patient absolutely refusing to take the same, we were thrown upon our resources for something to aid us and relieve, at least in part, the difficulty and suffering. Nauseating doses of emetics were duly considered, but discarded, whereupon I suggested the use of *hot water*, which being consented to, a rectal enema of 1 quart of hot water, of about 120° F., was administered with patient in the left lateral semi-prone position, during the interval of pains, while *hot water* (as hot as the patient could suffer comfortably), wrung out in clean cloths, was applied over the perineum and vulva (after being first well lubricated with warm lard), with my hand underneath, so as to notice with finger in vagina, the effects upon the tissues. The patient soon became more quiet, the parts began to assume a disposition to relax very perceptibly, and in less than five minutes the os uteri was dilated during the first contraction following, so that immediately thereafter I could readily pass my hand into the uterus; version being accomplished and the child delivered through a well relaxed vagina, perineum, etc.

Case 4.—Mrs. M. S., æt. 37, German, well developed, muscular and plethoric, composed but irritable, married one year, was taken in labor with her first child at about 7 o'clock P.M., June 14, 1889; the pains being mild at first, but continued increasing in frequency and severity till 10 o'clock, when they "came on" regularly every three to five minutes. It was probably an hour later before the patient would consent to an ex-

[83] Trans. Am. Gyn. Soc., 1883,

amination, which being then made, revealed a *very rigid* perineum and soft parts, the os uteri dilated to about the size of a silver half-dollar, with edges thin, wiry and unyielding, the uterine contractions frequent and very powerful, causing her great suffering, the child presenting vertex anteriorly, right; fœtal heart sounds distinct. I immediately concluded the better course, and advised blood-letting as a means of giving speedy relief and an easy delivery. The patient not only seriously objecting to this, but to anything whatever to be done to her person, saying most emphatically: "I want to be left alone entirely," consequently no attempts to give aid were made until about 7 o'clock A.M. June 15, when she began to give evidence of exhaustion from the long continued powerful contractions, which continued with the same regularity and severity all night, but now they began to grow weaker and less frequent, and at her request I made a second examination, which revealed a completely dilated os uteri, the head during the contractions bulging the perineum, which was, however, still rigid and unyielding, the fœtal heart sounds were likewise less distinct. Bleeding was again proposed but likewise rejected by her. I then suggested a hot water enema, which was consented to, and at once placed (using over 1 quart of hot water, 120° F.), which she retained without difficulty for about half an hour, the uterine contractions increasing in tone for several contractions, but as soon as the water was voided commenced to weaken down again. I now made an examination for the third time, and found the perineum comparatively soft and disposed to dilate. Hot water, 130° F., was applied (wrung out in clean cloths) to the perineum for about twenty minutes, when I noticed a discharge from the vagina of a dark red and greenish hue. Suspecting the danger to the child, I listened for its heart sounds, and failing to hear them, I kindly informed the patient of the fact, urging the use of the forceps, to which I soon received her consent. It was now about 8:15 o'clock A.M. June 15. I immediately applied the forceps, and in about ten minutes more had delivered the child through a perfectly relaxed perineum. The child, however, was cyanosed, drew several breaths and expired. The placenta was born with the child. Here we have a clear case that, had blood-letting been consented to early, when first proposed, the child would have been saved as well as the perineum. It also proves that hot water alone is sufficient to produce relaxation of the perineum.

The death of the child being evidently due to the abnormal rigid state of the perineum, and the powerful continued uterine contractions causing a too early separation of the placenta from the uterine walls, the uterine contractions becoming too weak from exhaustion to expel the fœtus, even though the perineum became relaxed.

BLOOD-LETTING.

Case 2.—In May, 1875, I[84] was requested by my preceptor to visit a woman who had been in labor nearly two days. On arriving at the patient's house, the midwife in attendance gave me the following account: The woman, she said, was large and fat, in labor with her first child, and 33 years of age; that she had been in labor forty-six hours, at the commencement of which everything appeared to do well; that the labor, though slow, gradually progressed until the head of the child had passed the mouth of the womb, after which, notwithstanding the pains were strong and frequent, no further progress was made. On making an examination, I found the head firmly wedged in the vagina, the external parts very firm and rigid, and it was with difficulty I could introduce two fingers into the os externum.

Here it was evident, that the rigidity of the external parts was the sole cause that retarded the birth of the child. I therefore immediately determined to bleed my patient, in order to effect a relaxation of the parts. My intention was to bleed *ad deliquium animi;* but after drawing off 48 ozs. of blood and finding there was no tendency to syncope, I stopped the bleeding to examine the state of the parts. I now found that they were very much relaxed, and that the head was slowly advancing, yet so perfectly easy was the patient, that it could not be ascertained from external appearances that the uterus was contracting. I then requested the midwife to take the seat, that I might tie up the arm, and before this was effected my patient was delivered of a large, healthy child, and declared that she did not experience the least degree of pain during the expulsion.

Case 5.—Mrs. J. K., æt. 46 years, the wife of a well-to-do Pennsylvania farmer, a large, muscular and well developed woman, sanguine temperament—being very plethoric; the mother of fourteen children, having had a comparatively easy labor with all, her children always being small at birth. Became in labor with her fifteenth child on the morning of the 13th day of March, 1885. During that entire day and night her pains were very frequent and strong, yet had so little effect in dilating the os uteri, that on the morning of the 14th it was only opened sufficiently to ascertain that the vertex presented anteriorly to the right. She continued suffering considerably from the violent contractions of the uterus, till 2 o'clock P.M.; but notwithstanding this strong action, the perineum remained inflexibly hard and tense, though the os uteri was fully dilated at 10 A.M. In the meantime I tried hot water enema, but it was impossible for her to retain it, while the inunctions of lard and hot water fomentations ex-

[84] William B. Dewees' Thesis on Means of Lessening the Sufferings of Parturition, for the Degree of M.D., University of Pennsylvania Medical Department, class 1877, p. 19, case vi.

ternally gave good effect upon the vulvar portion of the perineum, yet the muscular or deeper portion remained unyielding.

She being opposed to bleeding, I resorted to chloroform, which was absolutely ineffectual, making no impression or perceivable effect in relaxing the deep perineum unless pushed to a stage of complete anæsthesia, when the uterine contractions were arrested simultaneously with the relaxation of the perineum, and the moment the anæsthetic effects wore off, the uterus regained its vigor and the muscles of the perineum regained their former rigidness. This being repeated several times with similar results, I now obtained consent to bleed, and she lost by venesection 16 ozs. of blood. This, however, produced no effect; the perineum still retained its pristine rigidity at 4 o'clock P.M., when the uterine contractions began growing weaker from exhaustion. At about 4:30 P.M. I drew off from the vein in her arm 20 ozs. more of blood. So immediate was the relaxation of the perineum and the revivifying of the uterine contractions, that in twenty minutes she was safely delivered of a 13-lb. male child.

It may not be out of place to state that this woman's last previous child was born eight years before, that she had grown much more fleshy and fat, having increased in weight, up to the time of becoming pregnant the last time, 65 lbs.

Here we have a most striking case of the good effects of blood-letting in relaxing the perineum.

CHLOROFORM.

Case 3.—Mrs. R. W.,[85] æt. 32 years, being in an advanced stage of tuberculosis — the diathesis being hereditary, father and mother both having died from consumption—and a very nervous and irritable woman, had always suffered very much and long during all of her previous six confinements. This woman was taken in labor with her seventh child on the morning of June 2, 1876, and continued in great misery until the following day, when I was sent for. At 6 o'clock P.M., when I reached the lying-in chamber, I found her suffering excruciatingly, the pains returning every five minutes, and were violent in their nature. Upon making an examination the os uteri was dilated about the size of a gold dollar, the edges very thin and wiry, the perineum very hard, and the rectum filled with scybala. A warm water clyster unloaded the rectum, warm lard was freely applied to the perineum and vulva, and chloroform inhalations followed.

The patient was almost immediately relieved from the extreme suffering, while the uterine contractions seemed to come on more gradually and continue longer, and more powerful. There was none of that excited character in the contractions which distinguished those prior to the inhalations. The patient was not allowed to become insensible from the chloroform. Immediately after each subsidence of the contractions the chloroform was withdrawn—the interval of repose between the contractions becoming longer and more restful—and immediately upon their return was it again placed to the nostrils as before. This was continued during the entire delivery. After a few contractions had taken place after the chloroform inhalations were begun, I made an examination and, to my surprise, the os uteri was fully dilated, the bag of waters bulging the perineum, and the soft parts were fully disposed to dilate. I now ordered the midwife to place the chloroform, immediately after the return of the next contractions, which I would announce to her. This being done, I carefully watched the effects of the contractions, which were powerful, as they broke the waters and expulsed the child, in this one permanent contraction; the patient declaring herself to have experienced almost no pain. The time occupied in the full dilatation of the os uteri, perineum and adjacent soft parts, and the delivery of the child, from the first inhalation of the chloroform, was about forty minutes. There were no evil after effects to either the child or the mother.

Case 6.—Mrs. J. O., æt. 20, American (born in New York); medium height, well developed, of lymphatic temperament, nervous and irritable. Menstruated last the first week in October, 1888, hence by regular calculation would have been due July 8 to 13, 1889. *Primipara.* After suffering from irregular periodic pains for several days and nights, I was called on the morning of June 24, 1889. An examination revealed a normal os uteri, with no disposition to dilate, nor was any decided contraction of the uterus manifested during the period of pains. All considered, I concluded to trust the case to nature for further developments. At 8 o'clock on the same day, evening, I visited my patient again and found her in a similar condition. Satisfied that the suffering was caused by spurious, premature or "false pains," I accordingly administered a ½ gr. dose of morphine, which produced a quietus, and she had a refreshing sleep and good rest all night, as she informed me on my visit the following day. She was free from pain until the evening of the 25th of June, but concluded to pass the night without any attempt to get relief, and thus she continued in more or less suffering from irregular periodic pains until about noon of June 28, when she perceived a decided change in the character of the pain, which now became more regular and cutting. The midwife in attendance, noticing "a show" about 2 o'clock P.M. on the same day, dispatched the husband for me. Upon my arrival I found the patient in labor, contractions regular and forcible, about every five minutes, the os uteri dilated to about the size of a double eagle, and yielding naturally at each contraction. The perineum, however, was very rigid and promised some

[85] Loc. cit.—Author's Thesis, p. 22, case x.

difficulty ahead. Everything progressed naturally till the os uteri was fully dilated, and the bag of waters bulging the perineum, which proved unyielding; the liquor amnii being discharged naturally at about 4 o'clock, when the head advanced upon the perineum at each contraction, but in vain. I now tried hot water enemata, but she was absolutely unable to retain them. I then applied freely and continuously hot water fomentations and inunctions of lard to the perineum and vulva, and though its effect upon the vulvar portion of the perineum was very perceptible, yet it did not overcome the irritable contractions of the muscular or deeper portion of the perineum. I labored thus with the case patiently and hopefully until 8 P.M., when the uterine contractions began growing decidedly weaker from exhaustion, so much so that the case presented a dangerous outlook Consequently, after securing the consent of both patient and husband, I dispatched a messenger to Dr. F. B. Browne, who arrived promptly, and administered the chloroform, to a stage of semi-anæsthesia only (the patient declaring afterwards that she was conscious of all that transpired, but that she suffered very little pain), while I applied the forceps and by 9:15 o'clock had delivered a healthy boy of 8 lbs. through a perfectly relaxed perineum, the muscular contractions of the perineum yielding immediately under the chloroform, while the uterine contractions increased, and the head "turned out" with the forceps, leaving the tissues of the perineum all intact.

Here, then, we have a clear demonstration of the effects of chloroform in relaxing the perineum.

THE CLINIC.

REPORT OF CLINICS ON DISEASES OF CHILDREN.

BY WILLIAM B. ATKINSON, A.M., M.D.
OF PHILADELPHIA, PA.

[Reported for THE JOURNAL.]

CHOREA.

Gentlemen: This little patient presents a form of trouble which you are sure to meet with constantly when you engage in general practice. Her age is seven years. You will observe that she has a vague manner of moving her hands—an aimless motion, occasionally a twitching, and which she is wholly unable to control. This is commonly known as St. Vitus' Dance, Chorea Sancti Viti. The case before us is not an aggravated one, and evidently is yielding to the remedies which have been employed. This affection occurs almost entirely during the earlier years of childhood, but may be seen in older children, especially at puberty. While it does occur during infancy, this is extremely rare, though cases are recorded as young as a few months. Its *causes* are in the majority of instances anæmia, rheumatism, fright, imitation, the presence of intestinal parasites, more rarely of indigestible substances in the alimentary canal, or the excitement incident to uterine awakening, as at the approach of the menstrual discharge.

In my experience, anæmia and rheumatism have been the prodromes of the affection in the large number of cases.

Females are the sufferers in the proportion of two to one male. This may readily be accounted for when we reflect that they are less muscular, more endowed with nerve power. Among girls brought up in the open air, permitted to run and jump, and partake of the exercises which I am glad to say are rapidly becoming fashionable for the girls, here we rarely, I may say never, see this disease. But when a girl is confined for hours to her tasks, in a close poorly ventilated school room, under a harsh teacher, who regards asperity, not gentleness, as the proper method by which to enforce her commands, need we wonder that the child becomes a weak nervous being, or that she soon develops the symptoms of what is known as "nervousness?"

The symptoms are easily understood and the nature of the case recognized. There is an alternate contraction and relaxation of the muscles, generally of the hands, the face, the feet, sometimes of the whole body. The latter form is very rare, and may be taken for a convulsive attack. This is general chorea, and is much more rarely seen than the partial form. In the latter, there may be a constant movement of the hands and feet of one or both sides, or merely the almost ceaseless contraction and relaxation of the facial muscles, particularly of the eyes and mouth. The muscles of the left side are those most likely to be affected, as we see in the case before us. Undoubtedly this is due to the fact that the nerves and muscles of the left side are in the great number of persons less under the power of the will.

Let me in this connection urge you to consider the good results incident to the equal cultivation of the muscles of the left as with the right side. Every child should be encouraged to use its left hand as well as the right. Yet we are such helpless imitators, such creatures of fashion, that when a child in its earlier years attempts to use the left hand we at once resort to all kinds of plans, even cruelty, to break it of the so-called bad habit. Every child should be ambidextrous.

Except in rare instances, as where the cause is fright, the approach of the affection is so gradual that it is not observed, or disregarded as a careless trick of the child. With more or less rapidity the irregular movements become more pronounced; the grotesque actions of the child at-

tract attention, and often it becomes an object of ridicule. This acts to fan the flame, and in its annoyance and efforts to avoid observation, the sufferer is rendered rapidly worse. Except when asleep the affected parts are in constant motion, the actions are awkward, the hands are put forward to take an object and aimlessly withdrawn, the child spills its food on the way to the lips, the talking becomes a task in consequence of stuttering, and in aggravated cases the gait is irregular, although some writers deny that this ever occurs. Occasionally we find this affection associated with incontinence of urine. Upon inquiry this proves true here. This complication is of such importance and of so frequent occurrence that I shall have abundant opportunity to discuss it at these clinics. Again, in many cases we find it associated with "night terrors." Of this also we shall make a separate lecture.

The diagnosis rarely becomes difficult. Unfortunately, it too often is not recognized sufficiently early, and is regarded as the result of a bad habit or thoughtlessness, and treated accordingly by harshness or punishment, which adds to the original trouble. A child that is at all nervous is constantly in dread lest it may do something to incur additional fault-finding.

What prognosis can we give in such cases? From my own experience—which has been quite a large one—I may assure you that sooner or later these cases are sure to recover. Although I have encountered a number of very grave cases, yet I never knew one to end fatally, or to terminate other than in complete recovery. In one case which followed a very severe attack of rheumatism in a weak miserable little boy, the attack assumed for a short time the appearance of eclampsia, and the clergyman was summoned to prepare him for death. However, after a tedious attendance he entirely recovered. While as a general rule these cases rapidly recover, yet occasionally relapses occur and the patient appears as though making no progress. In the majority of cases upon investigation I have been able to prove these aggravations to have been due to natural causes, and might have been prevented.

You are no doubt anxious to learn what treatment promises the best results in such an affection. In this instance the child has been using the solution of the arsenite of potassa, in three drop doses three times a day, and is rapidly improving. In the employment of any of these toxicant remedies, I believe that the secret is to continue and push the remedy until its effect is shown by its special toxicant effects.

I would not have you regard any one form of medicament as the treatment for chorea. In all diseases of children my rule is to act according to indications. Never treat a disease by name. This is the most arrant empiricism. Always treat indications. Learn if possible what is the cause of the attack, and remove or obviate it if you can.

When anæmia is present give some form of iron and combine it with bark. The ferrated elixir of cinchona is a remedy which children can easily take, and rarely fails of being beneficial. The compound syrup of the hypophosphites also acts well. Build up the system with tonics, proper diet, air and sunshine. In mild cases we need nothing more. Of course, take the child from its studies, and if exposed to influences likely to act badly, remove it to a more congenial situation.

In very many cases we must administer arsenic iu some form. The usual preparation employed is what is known as Fowler's solution. Let the dose be small at first, repeated every three or four hours, and continued until its effect is shown by improvement, or by a puffiness beneath the eyes, slight nausea, etc. Then keep up the effect, either until the symptoms of the affection are entirely gone, or if these do not yield, or the toxic effects become too pronounced, it is time to resort to some other form of therapeutic. In the same way strychnia is employed, and several authorities prefer it to the arsenic. All agree that it should be exhibited in extremely small doses at the outset, and gradually increased till the peculiar effects of the drug are shown. These are slight cramps of the muscles, particularly of the calf of the leg. Both with this and the previous remedy I caution you to watch carefully the results, as in both I have occasionally seen the toxic effect suddenly produced. While I feel confident that you will generally cure your patients by the treatment indicated, yet it is necessary to say that now and then you will encounter a case which seems to defy your efforts. Here you may resort to the oxide, sulphate, or preferably the valerianate of zinc. The latter, combined with the valerianates of iron and quinine, will often give spedily the best results. The objection to this is the pill form in which it must be administered in many cases.

Should the movements become excessive so as to tire the child or threaten convulsions, the best thing is the use of the bromide of sodium, which may advantageously be combined with chloral. Do not forget why I prefer the sodium to the potassium salt. The former acts as readily, and without interfering with the digestion or the kidneys.

A variety of other methods of treatment have been proposed and employed, as electricity, serpentaria, etc., but they do not offer any better results. In the very large number of these cases seen here in the past, and which you will see constantly at my clinics, it is extremely improbable if one has occurred or will occur that will not readily succumb to the good effects of tonics, arsenic, strychnia, good diet and sunshine.

MEDICAL PROGRESS.

THE REPAIR OF OSSEOUS DEFECTS AFTER TREPHINING.—DR. R. JAKSCH (*Wiener Med. Woch.*, No. 38) reports a case in which he repaired a loss of substance in the skull after the removal of a depressed piece of bone 3½ cm. in diameter. The operation consisted in the transplantation of bone taken from the head of a gosling a few days old, and was performed ten days after the operation of trephining. At this time the wound was granulating nicely. The down was removed from the head of the gosling, the head itself was then cut off and received in a vessel containing a 2 per cent. solution of carbolic acid warmed to the temperature of 38°–40°. The top of the skull was then removed under water by means of a forceps and scissors. It was then divided into eight small plates, which were laid in proper order directly upon the granulating dura mater of the patient. An antiseptic bandage was next applied. This was allowed to remain for ten days, and upon its removal all the little bone plates were observed to have a rosy color and to adhere fast to the underlying tissues, while their points of separation were indicated merely by fine lines. Eight days later little knobs of granulation were seen upon the bone plates, while the former lines of separation had disappeared. Upon gentle pressure a parchment crackling was elicited. One week later the whole surface was granulating and no parchment crackling could be obtained by pressure. From this time on granulation advanced rapidly, and fifty-five days after the operation bony union was complete. At the point of injury there was nothing to be seen but a scar and a slight depression. The operator purposely left the wound open, in order that he might observe the progress of repair, and is convinced that vitality was preserved in the bone plates, and that the ossification of the opening in the skull proceeded from them. The transplanted bone plates effected an organic connection with the surrounding parts.

The writer gives the following brief summary of bone transplantations in such cases:

1. Reimplantation of the pieces of bone removed by trephining (MacEwen, Adam Kiewicz, Guérix.
2. Transplantation of pieces of bone taken from another bone of the same individual (Leydel).
3. Transplantation from one animal to another of its kind (Adam Kiewicz, Guérix).
4. Transplantation from one animal to another of a different genus (Guérix).
5. Transplantation from an animal of different order (author's case).

A NEW METHOD OF DELIVERY IN BREECH PRESENTATION.—DR. MARS (*Med. Ubersicht*) describes a method of extraction in breech presentation which he has successfully employed three times during the last twelve years. In the first position of the breech he introduces the right hand between the back of the child and the walls of the uterus, while the left hand is employed to control the uterus. The second, third and fourth fingers of the right hand rest upon the child's back, while the thumb and little finger seize the body by the crests of the ilium. During labor pains the accoucheur draws down until the present part appears at the pelvic outlet, when extraction is completed in the usual manner.

TREATMENT OF PYOSALPINX.—GOTTSCHALK reports (*Centbl. für Gyn.*) his experience with Walton's method of treating pyosalpinx by uterine drainage, preceded by dilatation. He regards the cases of simple collections of pus enclosed by thick walls in normally developed tubes as the only ones suited to such treatment, while the long sausage-shaped tumors with thin walls, separated from each other by indentations such as form in infantile tubes, should only be dealt with by extirpation.

A complete dilatation of the uterine canal prevents retraction of the walls, and in this way a *vis a tergo* is established, permitting the escape of the purulent contents of the tumor. Walton claimed to remove the obstacles to the escape of pus by means of the curette, but the reporter believes it quite improbable that one can directly dilate the tubal orifices by the sound or curette. Gottschalk's plan is as follows: Strips of iodoform gauze are carefully introduced into the uterus and removed the next day, when the uterus is washed out. Gauze is then again introduced in such a manner as to fill up the cornua as much as possible. This is repeated daily several times, and finally the tampon is allowed to remain for three days, until the uterine cavity becomes so much distended that all parts of it can be explored by the finger. Pains like those of labor are excited in this manner. In his two cases so treated the pus cavities were emptied and the patients recovered. When the pus begins to flow the uterine cavity is kept loosely packed with gauze, into which the pus escapes, and the irrigations are continued. If such a plan as has been described is not successful, the curette may be used, although the reporter avoids its use, as it may cause the pus sac to burst.

CODEINE IN DIABETES.—B. NOVARO (*Gaz. Med. di Torino*), has employed codeine successfully in cases of diabetes which have resisted other treatment. He prescribes 1 grain of codeine divided into 20 pills. Three pills are given the first day, and if well borne the dose is increased by 1 pill each day.

THE
Journal of the American Medical Association
PUBLISHED WEEKLY.

SUBSCRIPTION PRICE, INCLUDING POSTAGE.

PER ANNUM, IN ADVANCE.....$5.00
SINGLE COPIES.....10 CENTS.

Subscription may begin at any time. The safest mode of remittance is by bank check or postal money order, drawn to the order of THE JOURNAL. When neither is accessible, remittances may be made at the risk of the publishers, by forwarding in REGISTERED letters.

Address
JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION,
No. 68 WABASH AVE.,
CHICAGO, ILLINOIS.

All members of the Association should send their Annual *Dues* to the *Treasurer*, Richard J. Dunglison, M.D., Lock Box 1274, Philadelphia, Pa.

LONDON OFFICE, 57 AND 59 LUDGATE HILL.

SATURDAY, DECEMBER 14, 1889.

THE CONTAGIOUSNESS OF TUBERCULOSIS.

Not least among the advances of the century is the establishment of the fact that phthisis may be transmitted. The labors of LISTER taught the value of cleanliness even to those surgeons who do not accept all of his conclusions, and the investigations of KOCH have done a like service to the general practitioner. There are many who are yet unable to decide whether the bacillus tuberculosis is the cause or the result of phthisis; indeed, the feeble response that is made to the most approved methods of administration of the most available germicides, suggests very forcibly the thought that other factors may be equally necessary to the causation of consumption, and that the bacillus is not alone all powerful for evil.

However this may be, one thing seems to have been clearly demonstrated regarding the etiology of phthisis, and that is, that the disease is transmissible; that it can be carried from one who is the victim of tuberculosis to another who is free from it. If the bacillus is not the main cause of phthisis, the conditions which favor the growth and multiplication of the parisite are those which favor the development and progress of tuberculosis.

The testimony of experimenters and clinical observers is now almost conclusive as to the possibility of the transmission of tuberculosis, although there is yet and probably always will be, a difference of opinion held as to the manner of dissemination and the way of entrance. M. VILLEMIN, on behalf of a permanent committee appointed by the last Congress for the study of tuberculosis, to present practical conclusions concerning the prophylaxis of tuberculosis, has affirmed that tuberculosis is a virulent, contagious disease produced by a microbe (Koch's bacillus), which apart from hereditary transmission, finds its way into the organism through the respiratory and digestive tracts, and through wounds of the skin and mucous membrane.

There is probably not much importance to be attached to the idea of the hereditary transmission of the bacillus; in fact, is not the value of heredity as a cause of phthisis rapidly diminishing as the doctrine of contagion is made more lucid? A few years ago the victim of tuberculosis from a family in which there had been other cases, was generally thought to have in some way inherited the disease; to-day we ask if it is not probable that in consequence of close association with one or more of these cases, he acquired the disease by direct transmission of the cause.

It is well not to entirely dismiss the subject of heredity as having no part in the causation of phthisis. While direct inheritance of the disease is not probable, yet certain conditions of physique and temperament may be inherited, that favor the rapid development of the determining agent whenever it is implanted. Though it is possible that tuberculosis may be developed in a person previously in good health, yet we must conceive that it is more easily transmitted to one who through inherited or acquired systemic fault, has diminished power of resistance to disease.

Believing then that tubercular products may be carried to and planted in tissues that are ready to receive and nourish them, the study of prevention is at once suggested. So far, only partial success has crowned the efforts to eliminate the disease after it has once become established. Hence, the most important question of to-day is, can phthisis be prevented? Can the germs of tuberculosis be so thoroughly destroyed that the unaffected shall not be in continued danger from the disease?

In nearly all cases it is thought that transmission occurs in one of two ways: by the inhalation of tuberculous germs, or by their entrance into the alimentary tract with food. The two main sources are, the expectorated material from tuberculous subjects, and meat and

milk from tuberculous animals. It is distinctly asserted by careful investigators that the tubercle bacillus can live in the dried muco-pus, which in the form of finely reduced dust, can enter either the respiratory or alimentary tract. Here the physicians duty is plain.

The sputa of a tuberculous patient can easily be prevented from becoming dry and disseminated through the air, especially if the patient be unable to leave his room or house. Cuspidores should contain a solution of bichloride of mercury not weaker than 1–1,000, or what is probably quite as efficient, a strong solution of concentrated lye of the groceries. The cuspidores should have straight sides so that the sputa may not dry on its surfaces, and all clothes used for receiving expectoration should be kept moist and finally burned. If even this much were insisted upon both in the sick room and about hotels and health resorts, it would surely limit one great source of transmission.

The physician should go farther than this, and insist that no one be permitted to share the bed of a consumptive, nor to sleep in a bed or occupy a room that has been used by a victim of advanced phthisis until the best known methods of disinfection have been thoroughly carried out.

Prevention of transmission of tuberculosis by diseased food is a more difficult matter, yet much may be done by a careful medical attendant to lessen the danger. A consumptive mother should not nurse her child to the possible injury of both. If cow's milk be substituted, care should be taken that the source of the supply be healthy. We may not be able to estimate, but we can often prevent the danger that threatens children, especially in the city, who are daily absorbing milk from swill-fed and often diseased cows. It is no wonder that intestinal diseases closely allied to tuberculosis are constantly found in little children when the substitute for the mother so far as food is concerned, is a feverish cow, closely confined in a dirty shed and fed upon fermenting kitchen refuse and impure water.

Sometime we may have authorized a system of careful inspection of meat, but until then, this duty also must be performed by the physician so far as is possible. It is probable that diseased meat is a much less potent agent in the dissemination of tuberculosis, than either milk from infected sources or the exhalations and secretions from phthisical patients, yet whatever danger there may be from this cause should be averted.

If the march of so universal and destructive a foe to life can be thus easily limited, no intelligent physician can afford to fail to use his best efforts to accomplish so desirable an end. It is true that there is much more to be done, but this at least is practical, inexpensive and in the right direction.

DISINFECTION.

The time perhaps is not far distant when a physician's success will depend largely upon his ability to avoid or avert disease, and not to cure it. Our aim at present, in this direction, is mainly in the way of rendering the excreta of the patient, both solid and aerial, innocuous. Theoretically this can be accomplished in one of several ways; practically none of these ways are perfectly satisfactory. In very many cases—in fact in the bulk of cases—it is impossible to absolutely isolate the patient, and more especially the nurse and attendants. Of what avail is it to fumigate patient and room never so carefully, when all through the course of the disease the nurse has carried about and disseminated through the household the contagium of the disease? Again, is it probable that even hours of fumigating an apartment can destroy the germs carried into its crevices?

In considering the agents to be used for disinfecting, not only must we have in mind their efficiency, cheapness and convenience of use, but also their destructiveness. Sulphur burned in an apartment will destroy the coloring to a large extent, and, to be efficient, must be strong enough to do so. Carbolic acid, the chlorine compounds, corrosive sublimate and permanganates act, in the main, locally by destroying the virus held in dejecta and vestimenta, and vary in their destructiveness.

It is becoming a well recognized fact that surgical operations can be performed and healing go on free from sepsis by rendering the operation and subsequent treatment aseptic, and that antisepsis is not needed when the wound is aseptic. A somewhat similar state of affairs is probably true in the management of contagious diseases. While attention should be given to the final disinfection of the apartment, much more attention

should be given to the disinfecting of the patient, his surroundings and attendants during the course of the disease than is usually thought necessary, and it is reasonable to suppose that, other things being equal, recovering will take place the better, the more thoroughly this is carried out. With this end in view it should be the daily duty of the nurse to wipe up with a disinfecting solution the dust which accumulates in the apartment. As soon as the contagiousness of the malady is recognized the patient should be isolated and all unnecessary furniture removed from his quarters. Rigid oversight should be exercised with everything used. The matter may be summed up in a few words: Let everything the patient uses be set aside as his only; disinfect after each use of vessels or appliances; use as little furniture and as few utensils as is consistent with comfort.

It is the experience of our German confrères that typhoid fever and pneumonia do well, do best even, in a very low temperature. While some of the good result obtained by them is, undoubtedly, due to the constant change of air, a part is also due to the lowered vitality of the virus from the cold. It may be of service, then, to add to our other disinfecting agents not alone pure air, but cold pure air, and that, too, during the course of the disease.

EDITORIAL NOTES.

HOME.

THE THERAPEUTIC ANALYST will be enlarged and improved commencing with the January issue.

THE DENTAL COSMOS will commence the 90's by donning a new dress.

THE KALAMAZOO ACADEMY OF MEDICINE will hold their annual meeting during the Christmas holiday week. A committee consisting of Drs. McNair, Van Zwaluwenburg and Hochstein has been appointed to make the necessary arrangements, and some medical gentlemen of National reputation are expected to participate in the exercises. A banquet will be one of the attractions and the election of officers will take place on this occasion. So says the *Physician and Surgeon*.

DR. GEORGE M. STERNBERG, U. S. A., will deliver a lecture before the Brooklyn Institute on the 26th inst. His subject will be "The Methods of Research in Bacteriology," to be illustrated by living forms of bacterial life thrown upon the screen.

THE JEFFERSON MEDICAL COLLEGE has made a purchase of four pieces of property on Walnut street, in order to make additions to the College and Hospital.

CHRIST'S HOSPITAL AT CINCINNATI.—Additional hospital accommodations are about to be provided under the name of Christ's Hospital. Dr. C. G. Comegys is to be the chief medical adviser and organizer.

POST-GRADUATE CLINICAL COURSES will be shortly commenced at the Johns Hopkins Hospital, Baltimore.

THE ANNUAL REPORT OF THE SURGEON-GENERAL OF THE NAVY.—The annual report of Surgeon-General Browne to the Secretary of the Navy shows that, in addition to the eleven vacancies existing in the Medical Corps in October, 1888, six more occurred during the year—four by death and two by retirement. The transferring of the Medical Examining Board from Philadelphia to New York and the establishment of another Board at Mare Island has been attended with gratifying results, without lowering the standard of proficiency in the examination. A greater number of candidates have presented themselves, and twelve have passed the examination. At present there are eight vacancies in the corps, and there is reason to believe that they will soon be filled.

THE UNIVERSITY PRESS.—The *Philadelphia Inquirer* says that an enterprise in which officers and friends of the University of Pennsylvania have been engaged for some months has just been completed by the establishment of a publishing company under the name of the University Press. A charter has now been drafted and will be applied for. The officers are: Stuart Wood, of R. D. Wood & Co., President; H. La Barre Jayne, Treasurer and Solicitor; A. L. Hummel, M.D., General Manager; and the following Board of Directors: Provost Pepper, Joseph H. Cofrode, J. William White, M.D., Charles C. Harrison, Stuart Wood, H. La Barre Jayne, A. L. Hummel, M.D. (*ex officio*), and G. E. de Schweinitz, Secretary.

The capital stock is $100,000. Arrangements, however, are being made for doubling this amount,

and it is expected that in the near future the stock will reach $1,000,000. Among the stockholders, in addition to the officers, are Joseph D. Potts, Thomas Dolan, D. Hayes Agnew, M.D., Samuel Dickson, H. C. Wood, M.D,, Edward Martin, M.D., John Marshall, M.D., Dean of the Veterinary Department of the University; James Tyson, M.D., Dean of the Medical Department; John H. Musser, M.D., George I. McKelway, M.D., and Samuel D. Risley, M.D.

The company has been started for the purpose of controlling under one efficient direction the present periodical publications of the University, and of establishing such new magazines as the needs of the institution may suggest.

The addition of six publications to the two now issued under the auspices of departments, the *University Medical Magazine* and the *Political Law Series*, is already assured. The new journals will be the *University Magazine* (literary), the *University Legal Magazine*, the *University Veterinary Magazine*, the *University Biological Magazine*, the *University Psychological Magazine* and the *University Hygienic Magazine*. At least four of these new publications will appear by January 1, when the new organization will begin operations.

DIPHTHERIA seems to be more or less epidemic in all parts of the country.

DR. CHARLES WOLTERS has been elected resident physician to the Philadelphia Hospital, Department for the Insane.

THE NEW YORK BOARD OF HEALTH will take immediate steps to rid the city of the noxious odors arising from the manufacture of gas.

THE MIDDLETON GOLDSMITH LECTURE.—*The Times and Register* says that Prof. Willlam Pepper, Provost of the University of Pennsylvania, will deliver the Middleton Goldsmith Lecture before the New York Pathological Society, in the hall of the New York Academy of Medicine, on Wednesday evening, January 15, 1890. The subject of the lecture will be "Hepatic Fever."

THE NEW YORK BABIES' HOSPITAL.—New York claims the honor of having the only Babies' Hospital in the United States. A school for the thorough instruction of nurses in the care of babies will soon be established in connection with the hospital.

FOREIGN.

PROF. NEUMANN received, it is said, $20,000 for his professional visit to the late King of Portugal.

PROF. VON KRAFFT-EBING has been appointed successor to the late Prof. Leidesdorf in the Clinic for Mental Diseases in the Vienna Landes-Irrenaustadt.

RICORD is said to have left memoirs of his life and professional career under the suggestive title of *The Nineteenth Century Seen with the Speculum*.

RENAL SURGERY.—Mr. Bennett May writes to the *British Medical Journal:* My attention having been directed to Mr. Lawson Tait's table of operations in the *Journal* of November 16, in which he credits me with being the medical attent of one of his cases, I write to say that I have no knowledge of the circumstance.

DR. GEORGE N. STEWART, who for more than two years has been senior demonstrator of physiology under Professor Stirling in Owens College, Manchester, has been appointed to a George Henry Lewes studentship. Dr. Stewart's researches, especially on the polarization phenomena in nerves, are well known to physiologists.

DEATH OF A MEDICAL MAN FROM GLANDERS.—The Vienna Correspondent of the *British Medical Journal* writes: A painful sensation has been caused here by the death of Dr. Hofmann von Wellenhof, assistant to Professor Grüber in the Institute of Hygiene. Dr. Hofmann, who was only 26 years of age, had under his care a coachman who had contracted glanders from one of his horses. In preparing microscopic specimens of the bacilli of glanders Dr. Hofmann himself fell a victim to the disease, the infection, as was proved by post-mortem examination, having taken place through the mucous membrane of the respiratory passages. Death ensued very rapidly. It is said that another case of glanders has since come under observation in Professor von Schrötter's clinic.

WHOLESOME FOOD FOR RUSSIAN SOLDIERS.—The medical department of the Russian Ministry of War has decided to establish movable laboratories of toxicological chemistry and bacteriology attached to each army corps. In these laboratories all food supplied to the troops will be analyzed.

TOPICS OF THE WEEK.

THE EDUCATION, TRAINING AND QUALIFICATIONS OF THE MEDICAL OFFICERS OF HEALTH.

In the report of a recent meeting in England of the Society of Medical Officers of Health, published in the *British Medical Journal* of November 23d, the President, Henry E. Armstrong, M.R.C.S., commenced his address by observing that the question he had taken for its subject matter had of late attracted much attention, both in and out of the profession. There was a growing feeling "that the medical officer of health should no longer be allowed to learn his profession after his appointment to office, and gain his sanitary knowledge, perhaps after a series of ghastly failures, at the expense of the community by whom he was engaged." Time was when only the ordinary qualifications for medical practice could be required; when in the early dawn of the science of public health "its votaries had to grope their obscure way with feeble and uncertain step;" but those days were now long past. The necessity for an acquaintance with at least the elements of sanitary science by all medical men was already recognized; but how much more was a thorough knowledge of preventive medicine incumbent on those who chose it as their profession? This was now becoming felt even by the public. The idea that "prevention could not be divorced from cure was fast being replaced by the conviction that their union was objectionable on the ground of incompatibility of interests," and he hoped that the appointment to small districts of men engaged in general practice would, before long, be discontinued. The need for special qualifications was beginning to be understood by some sanitary authorities, though it had not been recognized by the Legislature until last year. The first step in this direction was taken in the 18th Section of the Local Government Act of 1888, which enacted that after the year 1891 no person should be appointed medical officer of health to a district or combination of districts having a population of 50,000 unless he possessed a diploma in public health, etc., or had served in that capacity for the three years immediately preceding to one of 20,000 inhabitants, or been for the same time an inspector under the Local Government Board. The Burgh Police and Health (Scotland) Bill went further, demanding the possession of a diploma by all medical officers of health, without exception, and discouraged private practice. Considering the wide range of subjects with which the medical officer must be conversant—legal, statistical and administrative, engineering, chemical, biological, etc.—and the mental training required for the investigation of the problems with which he had to deal, which could not be acquired without prolonged study, Mr. Armstrong was of opinion that not only should higher degrees in public health be instituted, but that aspirants to such degrees, which should rank with the Doctorate in Medicine, might well be exempted from some subjects, as surgery, midwifery, with which they had no concern, and be allowed to offer practical training in sanitary work in lieu of a portion of the clinical practice required of candidates for medical diplomas. If the departments of curative and preventive medicine should be thus divided, the instruction in the latter given at the medical schools must undergo a great development, and it must be raised into a faculty, instead of being, as at present, looked on as one of the minor subjects. But a grave want in our medical education, from which all students alike suffered, was the absence of all opportunities for the clinical observation of infectious diseases. Many practitioners had never seen a case of typhus, and made their first acquaintance with small-pox and scarlatina after they had entered on private practice, to the injury of their patients and of their own reputation. The records of admission to fever and small-pox hospitals bore witness to the frequent occurrence of errors of diagnosis of the gravest and most dangerous character on the part of private and parochial practitioners. Reviewing the conditions on which the existing diplomas in public health were granted, Mr. Armstrong insisted on the necessity not only for practical instruction in the laboratory, but of a period of service with the medical officer of health to a large town or district. These had, indeed, been recommended by the Medical Council, but had not been as yet introduced into the regulations. This want of administrative experience was painfully felt by medical officers when first called on to report and advise on insanitary dwellings, engineers' plans, or the construction and management of infectious hospitals, and when giving evidence in courts of law. This last requirement might, however, be dispensed with for some time to come in the case of men who had been actually in office for several years. But the medical officer of health, however well prepared to enter on his duties, must keep himself abreast of the progress of his science, and they had a right to claim that those, at least, who were in charge of large or populous districts should be regularly supplied with the reports of the Local Government Board and all like official publications, if only in the interest of the populations for whose well-being they were responsible.

SUMMER CAMPS FOR FEEBLE POOR CHILDREN.

The following extract is from a paper read at the annual meeting of The American Public Health Association, by DR. JEROME WALKER:

In 1874, Drs. Henry Hartshorne and J. M. Toner proposed summer camps, especially for feeble poor children, as an aid in decreasing the high mortality among young children. It was a question when the proposition was made whether mothers would be willing to leave their husbands and homes, even in the hope of improving the health of their sick or feeble children. In 1875, acting upon the experience of charitable people in Copenhagen, some good people of Boston, started what was known as the "country week," the sending of poor children for a week's outing to farm houses in Massachusetts. Since 1874, cities, societies, churches, newspapers and individuals have instituted "fresh air funds," summer resorts and seaside homes for poor mothers and their feeble children. Very little trouble has been experienced in inducing mothers to go for a week or two with their

children, or to allow children to go by themselves, to the seaside, the country or mountains. The husbands, for the most part, have come to see how much is saved in various ways by these trips, and so great is the rush by applicants that the question now is, how can we reach those who need the change most and how exclude the others? A real danger faces all these efforts to help the masses—the danger of overdoing. The charitably disposed, the philanthropic, the lovers of children, the emotional, people of wealth and leisure struggle to have a large sanitarium, the largest, if possible, and many donors, or trustees or helpers have one or more families in whom they are especially interested, and for whom they are positive the charity was established. Doctors are employed at a small pittance, or are allowed to give their services to show that medical attendance is furnished when necessary, but "change of air" is popularly believed to be all that is needed. The physician is not looked upon as a sanitarian, his highest function, and sanitary matters are relegated to irresponsible people. Large sanitaria become unwieldly and are machines, unable to give the true mother-like care which babies need. Better would it be for the babies if there were more sanitaria and smaller. Properly conducted summer health resorts must help to lessen infant mortality, though it would be hard to prove this statement by figures. A week's freedom from home cares and work, with pure air, an abundance of food, good sea bathing, opportunities to ride, etc., frequently brings the milk into the breasts of women who at their homes had insufficient nourishment and could not nurse their children. Mothers are taught the value of digestible, plain, wholesome foods, of regular times for eating, of cleanliness, to discard feeding bottles with long rubber tubes—"snake" tubes as some one has appropriately called them—to appreciate proper airing of rooms, that bathing not only makes a baby sweeter, but healthier. As I look back over my ten years' experience in connection with a seaside home for children, I can recall to mind woman after woman who has learned to be neat, clean, orderly, sensible, not all in one season, but after several visits to the seaside home. Every woman so trained, must, by the influence of her example, lessen, to a certain extent, infant mortality in the circle of her acquaintances.

Any one who has lived in winter in a light, well-ventilated, but well-warmed tent of generous size, or who has camped out in summer in a well-arranged, comfortable, airy tent, must feel that tent life could be readily and advantageously used for feeble and puny children of our cities. And this tenting need not be at a considerable distance from a city, but upon suitable lots or lands which are to be found within or near to the city limits. It behooves those acquainted with living in properly arranged tents to advocate camp life, and to overcome popular prejudices as to tents, founded sometimes on unpleasant experiences in dilapidated and badly arranged tents at camp meetings and other resorts. Large piers, which project into our rivers and bays, portions of our public parks and anchored vessels in midstream might well be utilized as sleeping places on hot summer nights, when sleep is the principal factor in the recovery of babies that are ill. How much more good could be accomplished by St. John's Guild if its barge had its inmates on the water for several days instead of for one day! What sanitaria the large iron ocean piers would make! To my mind one of the most important steps toward lessening infant mortality has been made by Dr. Sarah J. McNutt. In the summer of 1888 she fitted up a house in a crowded portion of New York city as a city summer sanitarium. Of the 108 babies received, all sick, 79 were under 1 year of age. Of these 79, 32 died, 22 of the deaths being in July, August and September. Dr. McNutt says: "Although that experience covers as yet only one summer, it seems to us to demonstrate that bottle feeding is not necessarily fatal, even in a hospital, and that a hospital for sick babies need not be a place for the production of autopsies alone." She shows that the quality of bottle feeding has much to do with infant mortality, and that to obtain the results she did hygienic measures were of paramount importance. The cost of maintenance of each patient in the babies' hospital per week was $4, a larger amount than most institutions care to acknowledge to the public.

"Line upon line, precept upon precept," an unflagging and judicious sanitary supervision of our children from their birth until we or they are called hence, will, above all things else, decrease infant mortality to the minimum. On the other hand, injudicious sanitary supervision, the watching of almost every mouthful of food a baby takes, constant anxiety lest the child is going to catch cold, the dread that the blood will be overheated by much exercise, etc., will be likely to worry both parent and child into an untimely grave.

MANAGEMENT OF INEBRIATE ASYLUMS.

DR. CROTHERS, of Hartford, Conn., writes as follows: The first inebriate asylum, at Binghamton, N. Y., was projected in 1844, but was not opened for patients until 1864, twenty years later. This was owing to the intense and bitter opposition to the theory of disease and curability in special asylums.

A good illustration of the historical fact, that every new truth in the progress of the world is greeted with storms of denial and fierce contradiction. This first inebriate asylum was the centre of the most crushing unjust criticism by the press, the clergy and others. Its managers and their theories and methods of treatment were always the subject of condemnation and persecution. The disease of inebriety and its curability in asylums was a great event that could not be suppressed by the change of Binghamton to an insane asylum, and today there are over a hundred asylums for inebriates in different parts of the world. Most of these asylums are founded on the fact, now well established, that inebriety is a disease of the brain and nervous system. The use of alcohol in many cases may be only a symptom, in other cases alcohol starts up a train of degeneration which has been inherited, and in all cases there is progressive dissolution of the brain and nervous system, that can easily be reached by medical treatment addressed to the entire

system. The removal of alcohol is only one factor in the treatment, the removal of the causes will always be followed by the cessation of the desire for spirits. All treatment and remedies addressed to one state or condition of the body fail, for the reason that inebriety is not a local desire, and does not come from the use of alcohol alone. Hence the true principle of treatment must include not only restraint, but limited freedom, together with all means known to science to build up and strengthen the entire system. In the largest and best asylums in this country and Europe all cases are treated as sick and diseased, the duration and degree of restraint is modified to meet the demands of each case, and the general treatment aims to remove the special and general causes which have brought on the disease.

It is a deplorable fact that all inebriate asylums are judged by the statements of incurables who have failed to be benefited by treatment. Judged from these criticisms no inebriate asylum could exist long. Those who are more or less cured in these asylums, disappear and never refer to them, or the benefits they have received. The criticisms of our work have been inspired in many cases by the incurables, while those who have been restored have been silent.

PRACTICAL NOTES.

EUCALYPTUS IN SCARLET FEVER.

The value of eucalyptus in destroying the infection of scarlet fever cannot be too widely recognized. On October 20 I saw a nurse in a family where there were three young children. She had the rash over her chest and arms, the complaint having commenced about thirty-six hours previous. She was removed to the hospital, and Tucker's eucalyptus disinfectant was ordered to be freely used in the nursery, the children being kept in an atmosphere strongly impregnated with it for three days and nights; after that they were allowed out during the day, but the disinfectant was continued in the nursery for four or five days longer, when they were considered safe.

On October 27th, I saw a girl about 11 years of age, whose sister had been sleeping with her. She had had sore throat for about two days, and the rash was fully out. The sister was not allowed to sleep with her, but she spent most of her time in the room during the next three days, when the new Act came into force, and they were separated. Here the disinfectant was rubber over the skin of the whole body night and morning for three days, afterwards at night only; the emulsion was administered, and the disinfectant freely sprinkled over the bed and about the room. The girl had a severe attack of fever, had rheumatism in her wrists and ankles for a few days. The desquamation was finished about the fifteenth day, and there was no appearance of albumen in the urine. The sister did not develop the disease, although exposed to the infection for five days, and three other children in the house did not take it. There was no carbolic or other sheet used over the door, the disinfection of the patient in the way described being sufficient to prevent any of the poison escaping from her.

It is to be hoped that others will try this method of disinfection, as, if it is as effectual in all cases as I have found it in all so treated during the last six months, there is every reason to believe that the infection of scarlet fever may be arrested in every case.—J. Brendon Curgenven, M.R.C.S., *British Med. Journal.*

MENTHOL IN LARYNGEAL PHTHISIS.

Twenty cases, most of them of a severe type, treated with menthol applications, furnished the author ground for believing that this is a valuable agent in tubercular laryngitis. The drug was dissolved in fluid cosmoline in the proportion of a drachm or a drachm and a half to the ounce, and applied by means of a laryngeal syringe, or in the form of spray, by a nebulizer or vaporizer. In nearly all cases the subjective symptoms and the local appearance improved. In no case did complete healing of an ulcer take place. In this respect the author's experience does not bear out the representations of Rosenberg and others. Three propositions are offered: 1. spontaneous cure of a tubercular ulcer of the larynx may occur; 2. a simple erosion or ulceration may be mistaken for a tubercular ulcer; 3. the best results from local treatment of the larynx may be expected in cases of incipient or limited pulmonary disease, and in primary laryngeal tuberculosis.—Dr. Chas. H. Knight, *Journal of Laryngology.*

THE USE OF MENTHOL IN THE UPPER AIR PASSAGES.

The drug controls superficial inflammation; that is an analgesic, and second application can be made in increasing strength without discomfort; that it is destructive of some of the low forms of life, especially the bacillus tuberculosis, and that is a valuable antiseptic in nasal surgery. It has an important place in the treatment of atrophic conditions. It can be used in strength of from one to fifty per cent., dissolved in oil. The oleum petrolia the author considers the best for the purpose of dissolving the drug. It can be applied directly by cotton application, or by means of the spray, or by vaporization. The direct method answers best in the pharynx, the spray and vapor for the nose and larynx. Five cases of laryngeal phthisis following upon disease of the lungs were also reported, in which the menthol treatment gave satisfactory results, the local conditions improving rapidly under its use. —Dr. F. H. Potter, *Journal of Laryngology.*

SOCIETY PROCEEDINGS.

Medical Society of the District of Columbia.

Stated Meeting, May 1, 1889.

DR. THOMAS E. MCARDLE, VICE-PRESIDENT, IN THE CHAIR.

DR. S. C. BUSEY presented

A SPECIMEN OF GENERAL CANCER, WITH A HISTORY OF THE CASE.

The man was 58 years old. Dr. Busey had attended his family for ten years, but rarely saw him professionally, as he preferred to consult some physician who would not insist upon his orders being carried out. In 1887 he had attended him for acute desquamative nephritis, from which he entirely recovered. From that time he had no knowledge of him until last January (23d), when he came to his office at night. In November, 1888, while on a visit to New York, he suffered from violent pains in the left lumbar region, which at times extended to the left iliac fossa, and obstinate constipation. For this condition he took drastic cathartics without any relief. After he returned home he was under the care of several different physicians, none of them being members of this society. He continued to suffer from these attacks and constipation, and finally his appetite became bad. The last physician treated him for rheumatism and applied electricity without relief. From the symptoms Dr. Busey concluded that he had some digestive disturbance, and upon a careful physical examination detected a tumor the size of a fist to the left of the navel, which was immovable and could be grasped by the hand. He presented a cancerous cachexia. He kept him under observation for two weeks and then had Dr. Thompson see him in consultation. They reached the conclusion that the tumor was malignant, and agreed to aspirate the following Sunday. Aspiration was performed without result. They then concluded to let him alone for four weeks. At the end of this time the tumor was as large as a child's head, but no fluctuation was detected, although it was thought that it might contain fluid. The question of operation was considered, but neither Dr. T. nor himself would accept it. As the disease progressed the evidences of cancer became more marked and he died April 24th. The pain was mainly confined to the left iliac fossa. The left leg became œdematous, and during the last three weeks of life he suffered from intense dryness of the mouth, which was his most distressing complaint. He never had much pain, and a dose of paregoric at night was all the analgesic required. Constipation was obstinate, but was finally relieved by glycerine suppositories. He died from exhaustion.

Dr. D. S. Lamb made the necroscopy. Body much emaciated. All the tissues somewhat blanched from the embalming fluid. Firm pleuritic adhesions at apex of each lung; pleura of each lung; especially the upper lobe showed many small, firm, flat, white patches of thickening; multiple fibroma; apex of each lung much contracted and in section showed abundant small, hard, pigmented bodies, possibly obsolete tubercle; these have not been examined microscopically. The pulmonary artery of the lower lobe of the right lung was stuffed throughout with clots, some dark, others pink in color. A few small purulent cavities in upper lobe of right lung. Heart weighed only eight ounces; fatty degeneration of mitral valve; more thickening of ovatic valve. Liver weighed fifty ounces; showed many superficial watery cysts and soft masses of cancer the size of a pea to a walnut, some of them intermixed with blood. Spleen small; pancreas normal. There was a large mass in abdomen, left side, below level of umbilicus, composed of coats of intestine united together by soft, granular material, encephaloid cancer, much intermixed with blood and continuous, with firmer portions of some in the subperitoneal tissue over the left brim of the pelvis. This mass was adherent firmly to abdominal wall. The intestinal peritoneum in places showed rounded, soft, pinkish thickenings, also encephaloid cancer. The right supra-renal capsule was normal; the left contained a yellowish, firm, oval cancerous mass the size of a marble. The right kidney normal; the left weighed only two and one-half ounces and showed many small superficial watery cysts, and the pelvis was much dilated from pressure below upon the ureter. Prostate gland enlarged.

A case of general cancer, primary, I think, in the subperitoneal tissue, secondary in the other situations mentioned. The microscopical examination was made by Dr. Wm. Gray, of the Army Medical Museum.

DR. J. FORD THOMPSON: At the first meeting they had agreed that this was not a case for operation. He had recently seen a similar case with Dr. Mauss and had refused to operate. He would not always refuse to operate when the tumor was movable and was confined to a portion of intestine and mesentery which would not necessitate resection. The surgeon determines the conditions and throws out doubtful cases. It requires good judgment to reject cases unsuitable for operation.

DR. J. DUDLEY MORGAN read a paper on

ACUTE ŒDEMATOUS UVULITIS.

Most authors, in writing of acute œdema uvulæ, or acute uvulitis, affirm or infer that the œdema is caused by or associated with cold, and that the pharynx and tonsils will show a sympathy of congestion somewhat proportionate to that acutely present within the uvula.

Mackenzie[1] says: "Some cases where the pharynx is inflamed the violence of the morbid action appears to be expended on the uvula." Sajous[2] speaks only of relaxed throat and uvula, which may be caused by chronic catarrhal inflammation; and Heath[3] of œdematous uvula due to inflammation and commonly found in any acute inflammation of the throat. Ingals[4], in his lectures on the throat, does not mention the subject. Browne[5], of London, in his recent edition, writes to the point; he says: "The uvula becomes suddenly red, swollen and infiltrated, with comparatively little hyperæmia of the neighboring parts. Cohen[6] notes that œdema uvulæ sometimes occurs during the progress of acute or chronic sore throat, and the organ may acquire the size of a large bean or even that of a plum; and will provoke spasms of impending asphyxia.

The case in question seems to be a unique one and a striking exception to the doctrine laid down by most of the authors consulted. *Case:* Mr. M., a patent attorney, aged 40 years, was on the morning of April 14th in perfect health and had never been treated for throat trouble. In the afternoon, which was clear and balmy, he experienced no symptoms of cold or catching cold. Later in the same evening his throat began gradually and steadily to fill up, and within four or five hours spasms of suffocation attacked him. Patient described it as though his tonsils had fallen and were movable in the throat. Could not swallow anything solid, and liquids with great difficulty. Had no fever, tongue moderately coated, and his daily regulations of life were and had been good. He had eaten a rather heavy dinner about 8 o'clock and had smoked and drunk a great deal, but not to excess. It was not until near 12 o'clock at night that he commenced to feel uncomfortable about his throat. Early the next morning he came to my office, asking to be seen immediately.

Inspection by aid of strong reflected light revealed a limited but intense palatine congestion and an enormous œdematous uvula. The tonsils, palatine folds and pharynx were not hyperæmic, and the patient complained of no pain on pressure externally against the tonsils, nor were they at all prominent to the touch. The uvula was fully the size of the thumb in thickness, and on inspiration and expiration would flap back and forth, sometimes lying as a great pendulous mass on the tongue, and then, on hasty and forcible inspiration, dropping deep in the fauces, setting up a succession of paroxysmal coughs.

With the aid of Ingals' dressing forceps I grasped the swollen uvula in expiration at its most pendulous portion and made a number of stabs with the bistoury, but finding only little bleeding I used a large needle, held it firmly with the needle-holder, thrusting the point many times deep into the tissues. The oozing of blood and serum was so little, and the swelling having diminished to such a slight degree, after waiting some fifteen or twenty minutes more I determined to try the effect of a strong solution of cocaine. I therefore painted the whole uvula with a 15 per cent. and reapplied within ten minutes. The engorgement now commenced to immediately disappear and was reduced considerably before the patient left the office, he expressing himself as feeling freer and more comfortable about the throat. I ordered a dose of Rochelle salts, a gargle of tannin, aconite and rose-water, to use no warm drinks and to take little or no food, and that of a liquid character.

The same day, six hours after, the patient returned to the office, expressed himself better, and on inspection I found the swelling had subsided fully one-half. Reapplied the solution of cocaine and continued liquid diet. Next day the uvula was almost normal in size; throat perfectly comfortable; patient discharged cured.

I was led to the trial, in this affection, of cocaine, knowing full well its power of readily reducing the turgescent mucous membrane in acute affections of the nasal passages. Its use in acute œdematous uvulitis may have been specially recommended; if so, I have failed to find mention among the number of works I have consulted. Laffont[7], of Paris, speaks of the local effect of cocaine in increasing the functional activity of the sympathetic nervous system, causing contraction of non-striated muscular fibres. Bosworth[8] claims that cocaine produces rigid contraction of unstriped muscular fibres, and that, topically applied, it will so constringe the blood vessels of an acutely inflamed mucous membrane as to arrest the disease. Wood's[9] experience is that in some acute mucous inflammations the primary bleaching is permanent.

To explain this rapid and localized œdema and equally rapid and permanent disappearance, I believe we must look to the vaso-motors as being greatly at fault. The uvula is in direct communication with the stomach, through the sympathetic system. Flint[10] says there can be no doubt that the sympathetic branches contain filaments capable of modifying the calibre of blood-vessels. We can trace the nervous origin by many routes; one among them is through the descending palatine branches into Meckel's ganglion, thence to the sympathetic root, on to the carotid and gas-

[1] Mackenzie, M., "Pharynx, Larynx and Trachea," New York, 1880.
[2] Sajous, "Disease of Nose and Throat," Philadelphia, 1886.
[3] Heath, C., in "Ashhurst Encycl. Surg.," New York, 1888.
[4] Ingals, F., "Disease of Throat, Chest and Nasal Cavities," New York, 1881.
[5] Browne, L., "Disease of Throat," 2d ed., Philadelphia, 1887.
[6] Cohen, "Disease of Throat and Nasal Passages," New York, 1880.
[7] Compt. Rend. Soc. de Biol., Paris, 1887, 8s.
[8] N. Y. Med. Record, Nov. 15, 1884.
[9] Wood, H., "Therapeutics, its Principles and Practice," 7th ed., Philadelphia, 1888.
[10] Flint, A., "Human Physiology," New York, 1882.

tric plexus. But the most direct and easily explainable route is by the afferent branches of the pneumogastric, joining with the filaments to the superior cervical ganglion, branches from which ganglion, forming a plexus on the external carotid artery, are distributed to the ramifications of this artery.

I regard this case as an illustration of a phenomenon acting reflexly through the sympathetic system, localized in its manifestation and operating from the stomach, a function not foreign to the sympathetic nor *contra ideas*, when we remember the important influence which the sympathetic always plays upon nutrition, calorification and secretion.

The rapid course which this disease ran shows, first, how the stomach may reflexly and acutely act upon the upper air passages; second, that by giving rest to the stomach and causing depletion, local and general, we effected a termination of this disease as hastily as it was acutely manifested.

DR. MURRAY: Œdema of the uvula without general congestion of the surrounding parts is not common. It does not occur in Bright's disease, and is found among the sequelæ of the exanthemata. In the aged it is also seen, the result probably of anæmia. The case presented, as interpreted by Dr. Morgan, was in his experience unique. Reflex irritation is the most interesting; the list of disorders directly referable to this agency is receiving constant additions. In the case before us Dr. Morgan has traced with accuracy the several channels through which the reflex may have come, but he has not clearly established the fact that it did not come through any of them; and Dr. Murray did not think it possible to do so. He was inclined to believe that the condition described by Dr. Morgan was directly due to the local irritation produced by the alcohol, which his patient had swallowed the night before. In the beginning there probably was general congestion. The uvula for obvious reasons being more congested than the surrounding parts stasis occurred. When the patient presented himself for treatment he had been moving about for several hours, and had possibly indulged freely in ice water. The general congestion had disappeared, leaving the œdematous uvula to tell the tale. The treatment instituted met all the indications and the result left nothing to be desired. Where there is much œdema the readiest means of getting rid of it is to clip a small portion from the most dependent part of the mucous membrane; if this is properly done it occasions no more soreness than scarification, and is more efficacious.

DR. KLEINSCHMIDT: The condition could be explained upon the reflex theory advanced by Dr. Morgan or the more direct route mentioned by Dr. Murray—either would produce the same result. Either theory would account for the promptness of relief by the treatment. Cases of œdema from alcoholic intoxication are not so uncommon, but they seldom consult a physician because the œdema passes off in a few hours under the ice water which is usually taken to allay the thirst following a debauch. He had seen two or three cases of enlarged uvulæ with symptoms of suffocation. He does not think the uvula is the only part congested. If the reflex theory was to be adopted, he thought he could trace a route more direct than that given by Dr. Morgan, namely: by way of the glossopharyngeal of the petrous ganglia, which was connected by the filament with the superior cervical ganglia, thence the vasomotor passed to the carotid flexus and supplied the parts involved.

THE PRESIDENT said he had seen a case of scarlet fever in which the throat symptoms had subsided; he allowed the patient to take some ginger ale and the next morning he found the uvula in the condition described by Dr. Morgan. He snipped off a small piece of the mucous membrane and it promptly healed. In a weak and debilitated old lady he found an enormous elongated uvula. He pulled it through her teeth and cut off fully 2 inches of the mucous membrane and she was well in 24 hours.

DR. THOMPSON saw a great many cases of elongated uvulæ with symptoms of suffocation. Not long since a physician came to his office at night because he feared he would suffocate before morning. The uvula was enlarged and elongated. He snipped off a piece of the mucous membrane and relieved him. It was not necessary to cut off much. If we cut off mucous membrane in proportion to the size of the diseased part, we cut off too much, so that when cicatrization takes place there is not much uvula left. He had never tried cocaine, as snipping answered his purpose. He usually used two instruments: Gross' forceps and uterine curved scissors. It was better to cut off a small piece of the mucous membrane upwards and anteriorly.

DR. MURRAY thought the operation best as performed by Dr. Thompson, with scissors and forceps.

DR. HAGNER thought it better to cut upward and backward, to prevent the food from coming in contact with the raw surface.

DR. MORGAN thought cocaine better in women and children, and in nervous persons who would object to the knife.

DR. J. FORD THOMPSON reported

A CASE OF CASTRATION FOR HÆMATOCELE,

and exhibited the specimen. Dr. Thompson thought the specimen of sufficient interest to present because the opportunities of seeing such pathological specimens are rare. Dr. M. Muncaster had brought the man, aged 27, to him for a tumor of the right testicle. On examination it presented

all the symptoms and had the appearance and history of hydrocele. It was of six years' duration; he attributed it to a fall, but it was slow in its growth, having taken six years to reach its present size. A few months ago he got married, when it occurred to him that he would have something done for it. The tumor was pyriform in shape; no enlargement of the cord; there was considerable induration, which he attributed to thickening of the sac. He detected fluctuation. He introduced a trocar above the middle of the tumor, but nothing came away; he withdrew the trocar, and upon palpating the lower part he detected fluctuation, and again introduced the trocar and drew off about a drachm of a peculiar looking fluid, which the patient likened to "tomato catsup." He now said it was a hæmatocele, and would require a more thorough operation. He had lost all sensation on this side three or four years ago. April 21, he operated under anæsthesia. As soon as the patient became anæsthetized the tumor felt so solid and indurated with spots here and there, of fluctuation, that he changed his view and believed it a sarco-cystocele. He then made a large incision through a dense tissue, which he supposed to be the tunica vaginalis, but which was the tunica albuginea. He dissected this off and castrated, finding the cord normal. The sac was the tunica vaginalis enormously thickened, filled with coagulated blood, which had misled him. The tunica vaginalis was in very much the condition of an old aneurism. It would be seen that the remains of the atrophied testicle were imbedded in the wall of the tunica vaginalis.

The diagnosis in such cases is almost impossible without an incision.

In the treatment of such cases puncture amounts to nothing. Then what is the next best treatment? In an ordinary case of hæmatocele the older writers advised to lay open the sac and let it heal by granulation; and the more recent, to dress it antiseptically. In such cases as this the operation he performed was far better. The other operation for such a case is Volkmann's, which would have made a long illness. The testicle was atrophied and useless to this patient, so there was no object in leaving it. In old men, or those past fifty, there is no question about the operation; in younger men, if the testicle is believed to be normal, it is better to dissect out the sac and let it fill by granulation.

Curling says: "Occasionally the blood is found converted into a solid fibrinous substance, of a yellow or fawn color, arranged in firm layers, similar to the coagula lining the sac of an aneurism.

"*Diagnosis.*—In old cases in which the tunica vaginalis and its envelopes have become much thickened and indurated the tumor possesses so firm a character, feels so heavy and solid, that it is very liable to be mistaken for a chronic enlargement of the testicle; and the diagnosis, at all times difficult, in some cases cannot be made out by the nicest manipulation of the most experienced hands."

Curling gives a personal case which, even better than mine, presents the difficulty of diagnosis in some old cases. A Portuguese, aged 26, consulted him—Curling—for disease of the right testicle. The organ was large, opaque, felt firm, weighed heavy, and afforded an indistinct sense of fluctuation. The enlargement had existed twelve years, but had grown a good deal lately. In expectation of finding fluid, he thrust a fine trocar into the upper part of the swelling, but nothing except a few drops of blood appeared. Mercury was then given to slight soreness of gums, with no effect. Being still impressed that fluid existed, he introduced the trocar into the lower part of the swelling, with the same result as before. A consultation was held over the case at the London Hospital. As a result of the consultation the tumor was strapped and iodide of potassium given for a fortnight; patient rather worse from treatment. At second consultation it was determined to remove the tumor by operation, thinking that it might be cystic. After careful manipulation the testicle could not be placed. An incision was made which passed through the displaced testicle and it was then castrated.

He also gave the notes of a case of death in an old man from opening the sac, which was so thick as to prevent its collapsing. In old men with thickened tissues castration is the best operation.

Erichsen says: If the tumor were of very large size, and the tunica vaginalis much thickened, hardened, and parchment-like, with adherent and laminated fibres, castration might possibly be required. He refers to such a case in which he castrated.

Dr. Thompson had seen a surgeon cut away the tunica vaginalis with the thermo-cautery in a case similar to his. He usually tapped a case of hydrocele and allowed the patient to walk home, but in this case he suspected something more and sent him home. In doubtful cases we should make an exploratory incision and be guided according to what we find.

Dr. Smith asked Dr. Thompson if hydrocele could have been differentiated by transmitted light in this case, or in one with such a thick sac?

Dr. Thompson: No. He seldom used artificial light in diagnosticating hydrocele, but depended upon palpation. If at the time of operation he failed to find fluid by the trocar he would make an incision.

Dr. Smith: This was the second diseased testicle that had been presented to the Society in twenty years. Six or seven years ago he presented a testicle which he had removed for tuber-

cular disease. He had some time previously operated on this man for hydrocele. Soon after he left the city. The tumor recurred and he consulted a surgeon, who stated that the hydrocele had returned; he tapped, but only got blood. Suppuration was then set up and the puncture would not heal. The man returned and consulted Dr. Smith. The testicle was removed and the man gained sixty or seventy pounds in weight. If the testicle had not been removed Dr. Smith believes this man would have died of tubercular disease. Dr. Smith thought that it was very singular that diseases of the analogous organs in the female were so much more frequent, and he did not know how to account for it. Women who abuse their sexual organs, as prostitutes, have ovarian disease requiring operation much less frequently than the virtuous. Why is it that the ovaries are so frequently diseased and the testicles so infrequently?

Dr. Thompson frequently operated on diseased testicles, but only presented unique specimens to the Society. This specimen was very uncommon, hence the interest in it.

DOMESTIC CORRESPONDENCE.

LETTER FROM NEW YORK.

(FROM OUR OWN CORRESPONDENT.)

Dr. Rockwell on the General Therapeutic Action of Electricity—Dr. C. L. Dana defends Static Electricity—Dr. H. D. Chapin on the Auriculo-Ventricular (presystolic) Sound, and Some Considerations on Cardiac Disease in Childhood.

It will perhaps be remembered that last spring Dr. M. Allen Starr, Clinical Professor of Diseases of the Mind and Nervous System at the College of Physicians and Surgeons, read a paper before the New York Academy of Medicine on "The Therapeutic Value of Electricity," the tendency of which was decidedly to undermine the confidence of the profession in this agent. At the last meeting of the Section on Practice of the Academy an opportunity was afforded to some of those whose views are at variance with those of Dr. Starr to defend it against the aspersions cast upon its good name.

On this occasion Dr. A. D. Rockwell, the well-known expert, read a paper on "The General Therapeutic Action of Electricity." At the outset he said that notwithstanding all that had been written upon electrical treatment, there existed so little correct appreciation of the physics of this agent that it became necessary to emphasize again and again the statement that electricity is not a simple, single manifestation of natural force, but a generic term including complex phenomena and a great variety of manifestations. Much, indeed, was claimed for it; but it accomplished much and produced effects widely divergent, so that it was often of service in more or less opposite conditions. Later he expressed himself in the following very plain language: "When its therapeutic efficiency is denied, the inevitable conclusion at which those must arrive who have time and time again witnessed evidences of its power is, that he who fails in his results is deficient in his experience, is not sufficiently persistent, or has somehow failed in the technique of his applications."

Electricity, he said, was not only a stimulant of the most powerful character, but it was also a sedative which in certain cases was unexcelled. Furthermore, it was a tonic of a very high order, and to produce the tension of the nervous system and of the muscular fibres generally which would enable them to respond to their natural stimuli, the mechanical effects of the faradic current seemed to be especially applicable. Properly applied, it would not produce any appreciable muscular contractions, and yet it gave passive exercise to all the deeper-lying as well as superficial muscles. Aside from its purely mechanical effects, it was evident that even this current exerted some other and more subtle influence upon the nerves themselves; for by no purely mechanical means could we account for the numerous phenomena that followed its use in diseased conditions. General faradization might be said to be indicated, therefore, whenever a constitutional tonic influence was called for.

This law rendered the remedy as valuable to the general practitioner as to the specialist. For the tedious period of convalescence which often follows typhoid and other fevers there was no remedy that was comparable to it, and in a large number of conditions of depressed vitality electricity in some of its forms would prove of service. In addition to giving passive exercise to the muscles, it rendered more natural the processes of secretion and excretion, corrected circulatory disturbances, and afforded tone and strength to both nerve and muscle. With these general principles in view, he said, we cease to wonder that electricity is used and recommended for such a variety of diseases, and appreciate the injustice of the criticism which condemns it because it is claimed to be of service in so many different conditions.

Having spoken of some of its physical effects, he said that the chemical or electrolytic influences which are associated with electrical action were practically confined to galvanism. Its special utility was in the department of electro-surgery; but it was undoubtedly true that some electrolytic action occurs in all ordinary applications of galvanism to the body, while it was probable that it was a factor of more or less importance in making up the sum of electro-therapeutic effects.

In its influence over nutrition, however, Dr. Rockwell went on to say, the physiological effects

of electricity were perhaps the most important; the action of either current modifying physiological function in various ways. Having mentioned its influence over the salivary and mucus secretions, and its admirable effect in the condition known as dry catarrh, he stated that his experience had been that appetite was sharpened, digestion quickened, and constipation relieved, both by local and general electrical treatment, so rapidly as to make it pretty evident that the gastric, biliary and intestinal secretions were markedly affected by the action of the current on the nerves supplying the organs of digestion. These results had also been recently confirmed by Ziemssen by experiments on animals. Among those affections of the bowels in which electricity was quite certain to exercise a beneficial influence were defective innervation, atrophy of the muscular tissue, digestive atony, and the wide section of diseases comprehended under the name of hypochondriacal and neurasthenic. The effect of electricity in diminishing, and even arresting, the physiological activity of the organs of secretion and excretion was next considered, and the paper brought to a conclusion with some notice of its influence on absorption and its consequent practical value in relieving many hypertrophies, effusions and morbid growths.

At the conclusion of Dr. Rockwell's paper Dr. C. L. Dana read a short paper which was devoted to a defense of static electricity. A recent writer on electro-therapeutics and physics, he said, had referred to electricity as a form of energy. This was a fundamental error, and showed a lack of grasp of the subject which was truly elemental. Electricity was not a form of energy, but a condition of ether in a state of stress or motion. The same critic also spoke of "producing" electricity; which was as absurd as to talk of producing matter. In static electricity the electrical fluid or ether was in a state of strain, like a thin rubber band stretched to its utmost. When the strain was relieved there was a disruptive discharge, as when the elastic band broke. By using small Leyden jars which filled and discharged very quickly the current could be made almost continuous and would cause chemical effects. The static discharge occupied such an exceedingly brief space of time that its intensity or current strength was hardly measurable; but its voltage or electro-motor force was immense.

In describing its physiological effects he said that the muscular contractions caused by static electricity had been stated to be due to a purely mechanical effect, like that of a whip; but this he believed to be an erroneous view for the reason that the sparks caused contraction when applied directly to muscle, while in order that mechanical irritation should cause contraction of a whole muscle, it was necessary that it should be applied at the motor point.

As to its therapeutic uses, he believed that the special advantage of the static battery was in paralyses with some spastic element, as in hemiplegias and paraplegias. Aside from this he said its best results were in chronic muscular rheumatic and neuralgic conditions and in many sensory disorders. It had a specific æsthesia-genetic influence in certain cases; producing effects in a way similar to metalo-therapy—not by mental influence or suggestion. It had practically a very great value in dispensary clinics where a good many cases of paralysis had to be treated. In nervous clinics with few patients and abundant medical attendance the faradic and galvanic battery might answer, and this might explain the indifference to static electricity by some of its critics; but in large dispensaries he considered it almost a duty to patients to have a battery which induced a prompt and efficient electrical treatment in all cases. "Our mastery of disease," Dr. Dana said in conclusion, "is not so great, or our means of attacking it so ample, that we can afford to ignore a single measure that will help us in the fight."

In continuing the discussion Dr. J. H. Gunning spoke particularly of the special value of static electricity in facial paralysis and of the faradic current as an emmenagogue.

At the same meeting Dr. H. D. Chapin read a paper consisting of two sections, the first being devoted to "The Auriculo-ventricular (presystolic) Sound," and the second to "Some Considerations on Cardiac Disease in Childhood." In speaking of the presystolic murmur due to mitral stenosis he said that in some cases it could only be detected after some exercise, and in making his examinations he was in the habit, therefore, of requiring the patient to first jump up and down a few times. The utility of such a precaution was shown by the fact that two individuals in whom he had found the murmur present had been able to secure first-class risks in life insurance companies; the murmur no doubt being imperceptible at the time the heart was auscultated by the medical examiners on account of the applicants being at rest. The prognosis in presystolic murmur he regarded as usually favorable.

In treating of cardiac disease in children he spoke of the well-known fact that rheumatism, ordinarily the cause of such disease, is apt to be very much less severe in children than in adults; the affection not infrequently escaping notice entirely. In his experience he had found that very often cardiac trouble does not occur with the first attack of rheumatism, and sometimes does not ensue until the child has had several attacks of the latter. He also spoke of the much greater tolerance of disease of the heart in children than in adults. In the treatment of such disease he laid stress on the prime importance of early interference and the insistence on complete rest.

In discussing the paper Dr. Andrew H. Smith said that he was not one of those who believe in the existence of a presystolic murmur distinct from the diastolic and having a mode of production and a significance of its own. There was, indeed, a presystolic murmur, but it was only a continuation of the diastolic murmur, reinforced by the contraction of the auricle. If the orifice were greatly narrowed, and especially if it was irregular, the flow of blood through it would cause a sound during the ventricular diastole and before the auricular systole. If, on the other hand, the orifice was less contracted and less irregular, the blood would pass through it silently until its flow was hurried by the contraction of the auricle; when a murmur would be developed. This supplement to the diastolic murmur he believed had no different significance from the latter, and he could see no reason for giving it an especial name. Dr. Smith said his experience coincided with that of Dr. Chapin as regards the tolerance of cardiac disease in early life, and stated that he had seen children who had had severe endocarditis complicated with very marked valvular lesions go on for years apparently suffering but little inconvenience.

Dr. A. L. Loomis said that he did not suppose that at the present day there was any doubt in the minds of auscultators as to the existence of a presystolic murmur. He had been accustomed to consider three classes of presystolic murmurs: the hæmic, the congenital, and those depending on chronic endocarditis. These murmurs were often independent of systolic murmurs, and sometimes were present in addition to the latter. He thought that, in general, we were apt to attach too much importance to cardiac murmurs. To be really of importance they must be accompanied by changes in the cavities and walls of the heart and in other parts of the system; and this was especially true as regards mitral disease.

Dr. E. G. Janeway said that for a long time some authorities hesitated to accept the existence of the presystolic murmur, on the ground that the auricle has not sufficient force to produce such a murmur. It could be positively demonstrated, however, that in reality very little force was required for this purpose. As regards the prognosis of mitral stenosis, his experience had led him to take a somewhat less hopeful view than had been expressed by Dr. Chapin and others.

Dr. J. Lewis Smith said that his experience coincided with that of others as to the comparative mildness of rheumatism in childhood, and he thought there could be no doubt that there were many "walking cases" of the disease. Parents would state that their children had not complained of pain, or if they did so, the circumstance was attributed to "growing pains," and regarded as a matter for congratulation, as indicating an increasing robustness of constitution. So far from this being the case, however, such "growing pains" were too often the evidence of a condition which caused irreparable damage to the heart. The occurrence of rheumatism was thus frequently overlooked, and hence the opportunity was missed for the employment of treatment which might avert the impending danger of permanent cardiac disease. As to the matter of prognosis in the case of valvular lesions in children, he expressed the conviction that we are accustomed to regard such trouble in too favorable a light. He had found that in many cases dilatation and hypertrophy developed in the course of two or three years, and subsequently the cardiac disease terminated fatally. P. B. P.

Is Small-Pox Contagious before the Eruption Appears?

To the Editor:—A man afflicted with small-pox walked our streets one day last week, causing no small degree of popular and journalistic agitation. A prominent physician who had examined the case is reported as saying: "I do not know that small-pox is contagious in the first three or four days, before the eruption comes out."

I can assure the profession that this malady is contagious in the pre-eruptive stage, and will now adduce a case in point: One night during the year ending July 1, 1872, a young German clerk sought admittance to the Long Island College Hospital, Brooklyn, N. Y. The Superintendent, William V. Blower, arose from his bed to admit the patient, but although not a medical man himself, upon seeing and questioning him he suspected the malady might be a contagious one, and as such were not admissible, he awoke me for advice. Although there was no eruption, at first sight I was convinced the disease was small-pox. The patient's repeated declaration that the only pain he had was a most excruciating pain in the left breast did not swerve me one iota from the diagnosis I had made, and I have always believed in regard to this case that the patient well knew what his malady was—had probably in his mind a distinct history of his exposure, but deliberately lied to avoid being sent to the Flatbush pesthouse.

We sent him to the attic accompanied by a nurse named Emanuel Pinn, aged 18 or 20 years, and at daylight called in our counsel—Prof. S. D. Armor, Drs. William H. Dudley and A. Mitchell. The counsel said: "We agree with you, doctor, that this man has small-pox, yet do not feel justified in sending him to the pesthouse until we see or feel some signs of an eruption coming." Three hours later they came again; there was still no eruption *visible*, but the *shotty* feeling (the feeling as if small gunshots were distributed there) was quite perceptible in the skin of the forehead.

This patient was then sent to Flatbush, and a most serious case it proved, but my recollection is that this patient recovered. Not so with Emanuel Pinn, the man who kept him company a few hours in the attic before the eruption appeared—for I repeat, *there was no eruption visible when the patient left us for Flatbush*. At the expiration of twelve days from the date of his exposure Pinn developed small-pox, was likewise sent to Flatbush, and died there of that disorder. Very respectfully,

T. J. HUTTON, M.D.

716 Chicago Opera House, November 18, 1889.

NECROLOGY.

Dr. T. B. Harvey.

Dr. Harvey, one of the best known and highly prized physicians in the country, died very suddenly at his home in Indianapolis, Ind., on the evening of Dec. 5. He was sixty-two years of age, and was actively engaged in the practice of his profession. In the presence of his class, and in the midst of a clinical lecture, in connection with the Indiana Medical College, he was suddenly stricken with cerebral hæmorrhage. He was saved from falling to the floor by the students surrounding him, and was placed in the clinic chair in which he was about to examine a patient. He was immediately conveyed to the adjoining library, still holding with firm grasp the notes of his lecture, and making desperate efforts to continue his address. Almost immediately, however, he became unconscious, and continued so till his death. As a successful medical teacher, Dr. Harvey was widely known and deservedly popular as a consulting physician and surgeon, especially in the surgical diseases of women. His services were greatly valued in the Mississippi valley. He was intimately known in the National, State and local medical societies, and everywhere sincerely esteemed. The sympathies of the profession will be freely accorded to his family, thus suddenly bereaved.

BOOK REVIEWS.

THE CEREBRAL PALSIES OF CHILDREN. A Clinical Study from the Infirmary for Nervous Diseases, Philadelphia, by WILLIAM OSLER, M.D., F.R.C.P., London, Professor of Clinical Medicine in the University of Pennsylvania, etc. Philadelphia: P. Blakiston, Son & Co. 1889. Pp. viii, 103.

This valuable contribution to the subject of cerebral palsies in children is based upon a study of 151 cases of the diseases under consideration. These are divided as follows: Cases of hemiplegia, 120; cases of bilateral hemiplegia, 20; cases of paraplegia, 11. The writer claims that the amount of material upon which his study is based is much larger than has heretofore been analyzed from any clinic. The cases are grouped in such manner as to illustrate the special etiological factors which appear in each series of cases. The clinical reports themselves are models of terseness and clearness of presentation. No attempt has been made to go into the details of etiology and pathological anatomy, the report being essentially a clinical one. The author is deserving of much credit for the admirable manner in which his subject is offered.

ELEVENTH ANNUAL REPORT OF THE STATE BOARD OF HEALTH OF THE STATE OF RHODE ISLAND FOR THE YEAR ENDING DECEMBER 31, 1888.

A reference to the index of this volume will serve to give a good idea of the excellent character of the work being done by the State Board of Health of Rhode Island. The topics are as follows: General Report; Report of the Secretary; Health of the State; Table of Comparative Prevalence of Diseases, five years; Reports of Medical Correspondents; Prevalence of Acute Diseases in the Towns; Reports of Town Clerks in Relation to Sanitary Improvements; Reports of Health Officers; Meteorology; Cattle Commission; Typhoid Fever and its Prevention; Scarlet Fever and its Prevention; Tuberculosis and its Prevalence among the Neat Cattle of Rhode Island; Public Statutes, chap. 83; Additions to the Library.

The articles on typhoid and scarlet fevers and tuberculosis in cattle are of much interest and of great practical value.

THE MEDICAL REGISTER OF NEW YORK, NEW JERSEY AND CONNECTICUT, 1889–90. Edited by WILLIAM T. WHITE, M.D. New York: G. P. Putnam's Sons, 1889.

This serviceable little annual, the twenty-sixth of its series, is always welcome. It is a credit to the editor, Dr. White, for his untiring efforts to make it a correct reflection of the *annus medicus*, as each flows by, of the American metropolis and a large adjoining territory. In addition to being a model of completeness and accuracy, it has a healthful policing influence over the quackish elements in medical practice. There has not been a year during the past twenty-six wherein it has not been threatened by some of the "irregulars," or by some whose names are omitted from registration "for cause," but no serious detriment has yet befallen the book from these threats. The book is full of information regarding the hospitals, medical colleges and societies of New York and vicinity. It is useful, reliable, and its *morale* is good, and on these grounds it is thrice welcome.

MISCELLANY.

HEALTH IN MICHIGAN.—For the month of November, 1889, compared with the preceding month, the reports indicate that tonsilitis, erysipelas, measles, membranous croup and small-pox increased, and that diarrhœa, remittent fever, typho-malarial fever, typhoid fever, whooping-cough, dysentery, puerperal fever, cholera morbus and cholera infantum decreased in prevalence.

Compared with the preceding month, the temperature in the month of November, 1889, was much lower, the absolute humidity was less, the relative humidity was more, the day ozone was less and the night ozone was slightly more.

Compared with the average for the month of November in the three years, 1886–88, inflammation of bowels, measles and puerperal fever were more prevalent, and cerebro-spinal meningitis, cholera infantum, cholera morbus and typho-malarial fever were less prevalent in November, 1889.

For the month of November, 1889, compared with the average of corresponding months in the three years 1886–1888, the temperature was higher, the absolute humidity and relative humidity were more, and the day and night ozone were less.

Including reports by regular observers and others, diphtheria was reported present in Michigan in the month of November, 1889, at 69 places, scarlet fever at 71 places, typhoid fever at 83 places, measles at 18 places, and small-pox at 2 places.

Reports from all sources show diphtheria reported at 9 places more, scarlet fever at 17 places more, typhoid fever at 30 places less, measles at 3 places more, and small-pox at 2 places more in the month of November, 1889, than in the preceding month.

LETTERS RECEIVED.

W. C. Robey, Holy Cross, Col.; Waite & Bartlett Manufacturing Co., New York; Bernam's Newspaper Agency, Ann Arbor, Mich.; Dr. C. A. Rust, Saginaw, Mich.; Dr. A. E. Simpson, Charleston, Mo.; Dr. A. B. Newkirk, Los Angeles, Cal.; Dr. John S. Coleman, Augusta, Ga.; Dr. James Tyson, Philadelphia; Dr. J. W. Breedlove, Fort Smith, Ark.; Dr. Wm. S. Stewart, Dr. A. L. Hummel, Philadelphia; Dr. L. H. Baker, Payson, Ill,; Dr. C. R. Marke, Bloomington, Ill.; Dr. S. Laughton, Bangor, Me.; Dr. B. F. Spangler, York, Pa.; The Commercial Bank of Minneapolis, Minn.; Century Chemical Co., St. Louis, Mo.; Dr. Joseph Eastman, Indianapolis, Ind.; I. Haldenstein, Harold P. Brown, New York; Dr. C. H. Hobbs, Denton, Tex.; Dr. O. Eastland, Wichita Falls, Tex.; Dr. E. T. Shelby, Atchison, Kan.; Dr. J. G. Weaver, Strasburg, Pa.; Dios Chemical Co., St. Louis, Mo.; Codman & Shurtleff, Boston; Woman's Medical College, New York; Dr. G. D. Stahley, Gettysburg, Pa.; J. Walter Thompson, New York; Dr. Albert M. Jones, Eaton, O.; Republican Printing Co., Cedar Rapids, Ia.; Dr. William Mackie, Milwaukee, Wis.; Dr. Samuel B. Rowe, Rolla, Mo.; Dr. Walter Channing, Brookline, Mass.; Imperial Granum Co., New Haven, Conn.; Dr. Joseph Price, Philadelphia; T. W. Hannaford, London, Eng.; Dr. H. Tupper, Bay City, Mich.; Frank S. Billings & Co., Chicago.

Official List of Changes in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from November 30, 1889, to December 6, 1889.

Major William D. Wolverton, Surgeon U. S. A., Ft. Douglas, Utah, is hereby granted leave of absence for one month, to take effect on or about December 18, 1889, with permission to apply at Hdqrs. Div. of the Missouri for an extension of seven days. Par. 2, S. O. 114, Dept. of the Platte, November 30, 1889.

Capt. John J. Cochran, Asst. Surgeon U. S. A., is granted leave of absence for fifteen days, to commence about December 1, 1889. Par. 8, S. O. 272, Div. of the Atlantic, November 27, 1889.

By direction of the Secretary of War, Capt. James E. Pilcher, Asst. Surgeon, is relieved from duty at Ft. Wood, New York Harbor, and will report in person to the commanding officer, Ft. Clark, Tex., for duty at that station, reporting also by letter to the commanding General, Dept. of Texas. Par. 3, S. O. 276, A. G. O., November 26, 1889.

First Lieut. R. R. Ball, Asst. Surgeon, Ft. Riley, Kan., will proceed to Ft. Sill, I. T., and report to the commanding officer for temporary duty at that post. Par. 2, S. O. 173, Dept. Mo., November 21, 1889.

By direction of the Secretary of War, Capt. John de B. W. Gardiner, Asst. Surgeon, will be relieved from duty at Ft. Reno, I. T., upon the arrival at that post of Capt. James C. Merrill, Asst. Surgeon, and will report in person to the commanding officer, Ft. Supply, Ind. Ter., for duty at that post. Par. 8, S. O. 279, A. G. O., November 30, 1889.

Capt. Walter D. McCaw, Asst. Surgeon U. S. A. (Ft. McPherson, Ga.), is hereby granted leave of absence for fifteen days. Par. 3, S. O. 276, Div. Atlantic, December 3, 1889.

Official List of Changes in the Medical Corps of the U. S. Navy for the Week Ending December 7, 1889.

Surgeon J. L. Neilson, detached from the U. S. S. "New Hampshire" and ordered to the U. S. S. "Portsmouth."

P. A. Surgeon H. G. Beyer, detached from the U. S. S. "Portsmouth" and placed on waiting orders.

Surgeon C. A. Siegfried, detached from the Naval Station, New London, Conn., and ordered to the "New Hampshire."

P. A. Surgeon Jno. H. Hall, ordered to the Naval Station, New London, Conn.

Asst. Surgeon I. W. Kite, detached from the Naval Hospital, Philadelphia, and ordered to the Naval Hospital, Pensacola, Fla.

Surgeon J. W. Ross, detached from the Naval Hospital, Pensacola, Fla., and placed on waiting orders.

Official List of Changes of Stations and Duties of Medical Officers of the U. S. Marine-Hospital Service, for the Three Weeks Ending November 30, 1889.

Surgeon C. S. D. Fessenden, to inspect unserviceable property at Cincinnati, O. November 18, 1889.

Surgeon R. D. Murray, granted leave of absence for thirty days. November 30, 1889.

Surgeon George Purviance, detailed as chairman Board of Examiners. November 20, 1889.

Surgeon J. M. Gassaway, granted leave of absence for twenty-nine days. November 13, 1889.

Surgeon John Godfrey, detailed as member Board of Examiners. November 20, 1889.

Surgeon Fairfax Irwin, detailed as recorder Board of Examiners. November 20, 1889.

P. A. Surgeon H. R. Carter, granted leave of absence for fifteen days. November 27, 1889.

Asst. Surgeon Seaton Norman, ordered to New York Marine-Hospital for temporary duty. November 21, 1889. To examination for promotion, November 22, 1889.

Asst. Surgeon J. B. Fattic, ordered to examination for promotion. November 22, 1889.

Asst. Surgeon F. C. Heath, ordered to examination for promotion. November 22, 1889.

Asst. Surgeon G. M. Magruder, ordered to examination for promotion. November 22, 1889. Granted leave of absence for twenty-seven days. November 29, 1889.

Asst. Surgeon T. B. Perry, granted leave of absence for twenty-five days. November 29, 1889.

Asst. Surgeon J. O. Cobb, granted leave of absence for thirty days. November 29, 1889.